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Causal Modelling of the Key Competitiveness Assessment Factors of Wellness Tourism Destinations: A DEMATEL Approach

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Abstract

Objectives: The objectives of this study are 1) to identify and prioritize the significant competitiveness factors that need to be considered in the context of wellness tourism destinations and 2) to identify the causal interrelationships between competitiveness factors that need to be considered in the context of wellness tourism destinations. **Methods/Analysis:** The theoretical framework of this research began with documentary research of secondary data, followed by semi-structured interviews and quantitative research using questionnaires to collect primary data from wellness tourism clusters and experts. Based on these responses, a multiple-criteria decision-making framework using the Decision-Making Trial and Evaluation Laboratory (DEMATEL) method was implemented to prioritize wellness tourism destination competitiveness factors and their relationships. **Findings:** The destination strategy and roadmap for wellness tourism were the most important competitiveness factors for wellness tourism destinations, and the wellness service experience and activities factor was the most significant cause factor, with strategies to improve service and restoration being the most significant source of effect. **Novelty/Improvement:** This research sheds light on wellness tourism destinations' competitiveness assessment factors and indicators and how to improve them to attract wellness tourists seeking preventive health care or health promotion services.

Keywords: Causal Model; Competitiveness; Assessment Factors; Wellness Tourism; Tourism Destinations; DEMATEL Method.

1. Introduction

Wellness tourism is considered one of the subcategories of health tourism [1, 2]. It is a type of tourism activity that has the objective of improving and building a better life and living conditions holistically, from the body, mind, emotions, career, intellect, and spirit [3, 4]. The primary motivations for wellness tourists are to place importance on and care about reactive activities, proactive activities, promoting ways of life, and improving their health through

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reactive activities of various types such as fitness, healthy food, resting, pampering themselves, and therapy [5]. At present, wellness tourism can be considered an interesting kind of tourism for those looking for a place to escape the pressure of work and daily life. Furthermore, after the COVID-19 pandemic in 2020, more and more people began placing more importance on keeping healthy and taking better care of personal hygiene and safety. This resulted in an increased appeal for wellness tourism and services. Additionally, international wellness tourism industries were able to generate high revenue in several countries, which led to a higher value of the wellness tourism trend. More people would visit several countries within the ASEAN region, which is considered a destination for wellness tourists. This is especially evident with Thailand, which as of now is considered a leader in wellness tourism in the ASEAN region, with its key advantages being medical personnel and facilities that are certified according to international standards as well as an affordable treatment rate with regard to the service quality received. Not only that, Thailand also has many tourist attractions that can attract and facilitate tourists exceptionally, to the point that it is bestowed the title “The Spa Capital of Asia”, as well as being a popular wellness tourism destination for tourists worldwide looking to use the luxurious and high-quality wellness facilities [6]. Consequently, wellness tourism businesses have an important role in meeting the needs of Thai citizens, who are hoping to spend their vacation days to restore their health and life quality and to try and seek refuge from the monotonous environment.

Currently, wellness tourism has been rapidly expanding all over the world, including within Thailand itself, due to its advantages in capacity, location, and variety of tourism resources. This can be seen in the year 2022, when the Global Wellness Institute (GWI) ranked Thailand’s wellness economy size at 23rd place globally, with as much as 29.0 billion USD in expenses and a growth rate of 5.7% per year, which is higher than the overall tourism growth rate of 5.4% per year [7]. Additionally, Thailand’s wellness tourism is added to the 2016–2025 Strategic Plan to Develop Thailand into an International Medical Hub [8]. Consequently, wellness tourism is garnering interest in Thailand’s present situation because it is an area with a high growth rate, which is in part thanks to the increased health awareness of the population.

To increase Thailand’s competitiveness in wellness tourism, special attention has to be given to wellness tourism destination competitiveness, which includes the readiness of tourist attractions or areas that allowed development, improvement, or changes, and the question of whether a local area is appealing enough to attract wellness tourists to it. This is to increase Thailand’s competitiveness in wellness tourism to become the best in Asia and capable of supporting wellness tourism on an international level, all in order to develop Thailand’s wellness tourism businesses so entrepreneurs, community enterprises, and relevant personnel in wellness tourism businesses from both the public and private sectors can increase their wellness tourism capacity, especially for foreign tourists. This will benefit and develop the economy in local areas, be a tool to increase business values to generate income for the community, and lead to sustainable development in the future, as well as improve Thailand’s wellness tourism competitiveness on the international stage to reach a higher rank, especially as a genuine and sustainable world-class wellness tourism destination. To that end, there is a need to identify and prioritize significant competitiveness factors that need to be considered in the context of wellness tourism destinations and to identify the causal interrelationships between competitiveness factors that need to be considered in the context of wellness tourism destinations. One of the popular methods for analyzing and identifying significant factors, prioritizing them, and displaying the causal relationships and the effects of each factor and between evaluation indicators in order to assist in multiple-criteria decision-making (MCDM) or multiple-criteria decision analysis (MCDA) is the DEMATEL method.

The DEMATEL method (Decision-making Trial and Evaluation Laboratory Method) was first developed by the Battle Memorial Institute between 1972 and 1976 [9] to study ways to solve complex decision-making in an obscured environment. Additionally, the DEMATEL method is widely accepted as the best tool to solve complex and obscure decision-making issues and can identify the “cause and effect” relationship between factors and indicators used to support decision-making effectively [10–14]. Tzeng & Huang [15] defined the DEMATEL approach as having the following advantages: 1) being able to gather group knowledge to capture subsystem interactions. 2) able to develop an evaluative structural model for decision-making, and 3) able to visualize the causal relationship of subsystems by providing a causal diagram that enhances comprehension of the nature of the problem and facilitates group communication.

Furthermore, there is a review of literature regarding the application of the DEMATEL method for multiple-criteria decision-making in different tourism contexts, including Esfandiar et al. [16], who used the fuzzy DEMATEL technique to identify the relationships and strengths of influence among tourism shopping satisfaction components. In terms of identifying the important determining elements for the quality of tourists' shopping mall satisfaction, the research has implications for both the literature and practice. However, because not all tourism aspects are the same, the findings of this study may not be generalizable to other types of tourism attractions. The study only looked at expert perceptions of tourists, and more research is needed to explore or compare inhabitants and tourists. The study's proposed qualities were based on the authors' work and expert preferences, which may have introduced bias. More specialists should be involved in future investigations to validate the results.

Chu-Hua et al. [17] used Z-DEMATEL, an advanced decision method that combines Z-numbers and a decision-making trial and evaluation laboratory (DEMATEL), to precisely uncover the interrelationships between the determinants of bed and breakfast (B&B) tourism in Taitung. Through information integration, the study strives to eliminate the ambiguity of expert expression and provide enhanced methods for poverty alleviation and population

return in Taitung. Nonetheless, the publication does not include a full explanation of the study's shortcomings, such as its application to different contexts or inherent biases in expert responses. The report makes no mention of the framework's possible limitations based on human-land interactions, such as the generalizability of its findings to other undeveloped areas or the potential influence of external factors on poverty reduction through B&B tourism. Asadi et al. [18] used integrated GIS-based MCDA and Decision-Making Trial and Evaluation Laboratory methodologies, as well as DEMATEL-based Analytic Network Process through ordered weighted average approaches, to identify and evaluate ecotourism attractions in the Abbas Abad Wildlife Refuge in Iran. The study's findings are complemented by a map highlighting regions with high potential for ecotourism, which can help tourism managers discover factors that can increase the appeal of ecotourism attractions. However, the findings may be limited to the Abbas Abad Wildlife Refuge in Iran's Isfahan Province and may not be applicable to other ecotourism locations.

Oralhan et al. [19] used multiple-criteria decision-making approaches to assess the performance of nine top ski centers in Turkey. It establishes the criteria for selecting ski centers, computes the criteria weights, and assesses the performance of these facilities. The study provides a road map for evaluating performance in ski tourism and assists ski centers in identifying problems and improving facilities to attract more guests. Even though the study focused on nine operating ski facilities in Turkey, it is possible that it may not reflect all ski centers in the country or internationally. Future research should use a larger sample size and look at different ski resorts. The research method employed in the study was fuzzy multi-criteria decision-making models. Future research could look into different methods of analysis, such as structural equation modeling or cluster analysis.

Huang et al. [20] proposed a comprehensive evaluation model for sustainable island tourism using the FDM-DEMATEL-ANP method. It offers principles and recommendations for the growth of sustainable island tourism. The study identifies the components of sustainable island tourist evaluation criteria, such as governance, economy and finance, socio-culture, and the environment. The importance of governance and finance components, as well as evaluation criteria for the marine industry, marine cultures, and marine habitats, is emphasized in the article. The study's findings highlight the relative importance of many elements, with economy and finance being the most important, followed by governance, the environment, and socio-culture. Nonetheless, the publication makes no mention of any potential biases or limitations in the study's literature review or expert surveys. The study makes no mention of any potential constraints in the data collection process or sample size. The report makes no mention of the findings' generalizability or the evaluation model's application to diverse island tourist scenarios.

Gómez et al. [21] investigated the primary elements driving Ecuador's development as a tourism destination using two neutrosophic methodologies, neutrosophic AHP and DEMATEL. The report emphasizes the relevance of tourist package costs and tourist destination security as issues that require more attention for Ecuador to become a sustainable tourism destination. Using the DEMATEL technique, the research gives insights into the causation and effect linkages between factors driving tourist development in Ecuador. The paper contributes to tourism development by applying neutrosophic decision-making and expert criteria processing methodologies. The publication, however, does not specify the criteria utilized to select the panel of experts for the study. The report does not address the potential limits of depending only on expert opinions for tourism development decision-making. Fathi et al. [22] used DEMATEL approaches to determine the important aspects influencing the future of Iranian apitourism through theoretical underpinnings and expert interviews. The creation of feasible scenarios assists stakeholders and actors in Iranian apitourism in developing adaptable plans for a variety of situations. Nonetheless, the publication does not include a full overview of the methods utilized for scenario planning and driver selection, which may restrict the study's transparency and replicability.

Kaymaz et al. [23] used Geographic Information Systems (GIS) and Fuzzy Decision-Making Trial and Evaluation Laboratory (DEMATEL) combined approaches to construct a comprehensive and reliable model for evaluating suitable places for sustainability approaches in the region regarding ecotourism. The model is used to examine the ecotourism suitability map, classifying places as extremely appropriate, suitable, moderately suitable, and not suitable for ecotourism activities. The model's advantages include accurate decision-making, planning, execution, and conservation of the natural and socio-cultural environment, making it easier to create a sustainable structure for ecotourism. The approach has the potential to be implemented in other places with similar geographical characteristics, offering a replicable and adaptable criterion structure for defining viable ecotourism areas. In any case, the research does not address any potential issues or drawbacks in using the GIS-Fuzzy DEMATEL MCDA model to evaluate locations for ecotourism development. The paper makes no mention of any limitations in the data utilized for analysis or potential sources of uncertainty in the results.

Hosseini et al. [24] developed fourteen criteria for measuring tourism dangers in Tehran's major districts using the fuzzy decision-making trial and evaluation laboratory (FDEMATEL). It also makes use of the DEMATEL-based analysis network process (DANP) to build a fuzzy influential network relation map and determine fuzzy influential weights. The paper offers the hybrid modified fuzzy VIKOR approach for evaluating and mitigating tourism hazards, with the goal of decreasing the gap to zero. The empirical case study of Tehran demonstrates the applicability and

efficacy of the offered methodologies for measuring and analyzing tourism risks in real-world scenarios. The proposed strategy could be valuable for tourist and urban planning managers. However, it should be noted that the study focuses on a specific case study of Tehran's central district, which may limit the findings' applicability to other urban heritage sites. While fuzzy decision-making methods provide a thorough assessment of tourism risks, they may inject subjectivity and uncertainty into the review process. The report makes no mention of the probable difficulties or constraints of implementing the recommended methodologies in real-world circumstances or of getting the necessary data for the assessment. More research and validation of the proposed methodologies in diverse situations and with larger sample sizes would be desirable in order to increase the findings' dependability and applicability.

Zhou et al. [25] found key evaluation parameters that influence the aesthetic experience of Zoumatang Village in Ningbo, China, and increase tourist satisfaction. The study suggests using the Delphi technique to establish these criteria and accurately evaluate the essential aspects using the DEMATEL and ANP methods. It also conducts an important performance analysis (IPA) with a satisfaction questionnaire to improve tourists' propensity to return and their contentment. The findings of the study provide a framework for significant criteria for the aesthetic experience of Zoumatang Village, as well as a ranking of their importance and causal links. The findings have the potential to improve the aesthetic experience of Zoumatang Village as well as give research methodologies and suggestions for rural tourism development planning and integrated marketing. The study adds to the empirical research on the aesthetic experience provided by tourism, which has been lacking in prior studies. Despite the fact that the research is based on a literature evaluation and expert opinions, bias may be introduced, and the perspectives of all tourists may not be entirely captured. For evaluation, the study employs the Delphi technique and the DEMATEL-based ANP method, which may have drawbacks in terms of accuracy and objectivity. The study does not give information on the sample size or demographic features of the visitors polled, which may affect the findings' generalizability.

Chang & Wu [26] suggested a decision-making approach for tourism stakeholders to address the COVID-19 pandemic's impact on the tourism business. To create a Gap Model of Tourism Stakeholders (GMTS), the study employs new approaches such as Teorija Rezenija Izobre-tatelskikh Zadach (TRIZ) principles and Decision-Making Trial and Evaluation Laboratory (DEMATEL) methodologies. The research identifies 11 criterion factors and investigates the causal link between them in order to provide tourism stakeholders with decision-making guidelines. The study includes research literature and practice implications for stakeholders in the tourism industry, providing insight into how to prepare for sustainable development implementation. Nonetheless, the study included a small number of tourism sector specialists, which may limit the range of opinions and discussions on the adoption of the Gap Model of Tourism Stakeholders (GMTS). The study's primary criteria variables were concentrated on the COVID-19 phase, and more research is needed to determine their relevance and application in the post-implementation stage. The research recognizes the need for future studies to involve tourist stakeholders from various industries and nations in order to validate the findings and improve the robustness of the decision-making model.

Lo & Liou [27] used the DEMATEL approach to investigate the linkages among the factors that influence medical tourism in Malaysia. The authors discuss the management implications and recommendations for medical tourism in Malaysia. The authors contend that applying the TOPSIS method to the issue of medical tourism in Malaysia is inappropriate. Nonetheless, the drawbacks of the DEMATEL method and fuzzy TOPSIS approach employed in the original study are not examined in depth. The paper does not offer alternate methodologies or ideas for overcoming the constraints of the original paper. The report does not give a full assessment of the methodology or recommendations for future research on the subject of Malaysian medical tourism.

Altuntas & Gok [28] employed the decision-making trial and evaluation laboratory (DEMATEL) technique to assist countries in making quarantine choices during the COVID-19 pandemic, with a particular emphasis on the impact on the hospitality industry. The study analyzes inter-regional travel flow across areas for local tourism using data from the Turkish Statistical Institute (TurkStat), with a focus on Istanbul's impact on the rest of Turkey. The DEMATEL approach, which provides a digraph indicating causal relationships among areas, is emphasized as one of the most widely used methodologies in operational research. Using the DEMATEL approach, the study undertakes a real-life case study to discover direct and indirect interrelationships among Turkey's regions. The study's findings not only help to comprehend the impact of the COVID-19 pandemic on the hospitality business but also suggest insightful ways for other developing countries based on Turkey's experience. However, the DEMATEL approach utilized in the study may have drawbacks of its own, such as reliance on subjective expert views and the possibility of bias in decision-making. For the inter-regional travel movement, the study relies on data from the Turkish Statistical Institute (TurkStat), which may not fully depict the intricacies and dynamics of domestic tourism during a pandemic.

According to studies, many researchers in various fields have used the DEMATEL approach to examine a wide range of themes and aspects in tourism. However, the DEMATEL technique has been rarely applied in research on the competitiveness factors of wellness tourism destinations. Based on some of the limitations of those previous studies, the idea of this research is very appropriate to be expressed to overcome the limitations of previous research related to applying the DEMATEL technique to the competitiveness factors of wellness tourism destinations. Due to the research

gap in this field, we try to perform our analysis of cause-and-effect relationships between these factors. The novel idea of this research is to construct the theoretical framework from both demand and supply sides with documentary research of secondary data, followed by collecting primary data through semi-structured interviews jointly with quantitative research with empirical data. Then, questionnaires were formulated as a tool for data collection from the perspectives of wellness tourism clusters and experts. Based on these responses, a multiple-criteria decision-making framework using the Decision-Making Trial and Evaluation Laboratory (DEMATEL) method has been implemented for prioritizing the significant competitiveness factors that need to be considered in the context of wellness tourism destinations and their relationships. Taking account of these requirements, this study develops the following research questions: 1) What are the significant competitiveness assessment factors that need to be considered in the context of wellness tourism destinations? 2) What is the cause-and-effect relationship of such competitiveness assessment factors that need to be considered in the context of wellness tourism destinations? Consequently, the research objectives of this study are 1) to identify and prioritize the significant competitiveness factors that need to be considered in the context of wellness tourism destinations and 2) to identify the causal interrelationships between competitiveness factors that need to be considered in the context of wellness tourism destinations.

2. Materials and Methods

The development of the theoretical framework of this research began with documentary research of secondary data, followed by collecting primary data through semi-structured interviews jointly with quantitative research, using questionnaires as a tool for data collection, as displayed in Figure 1.

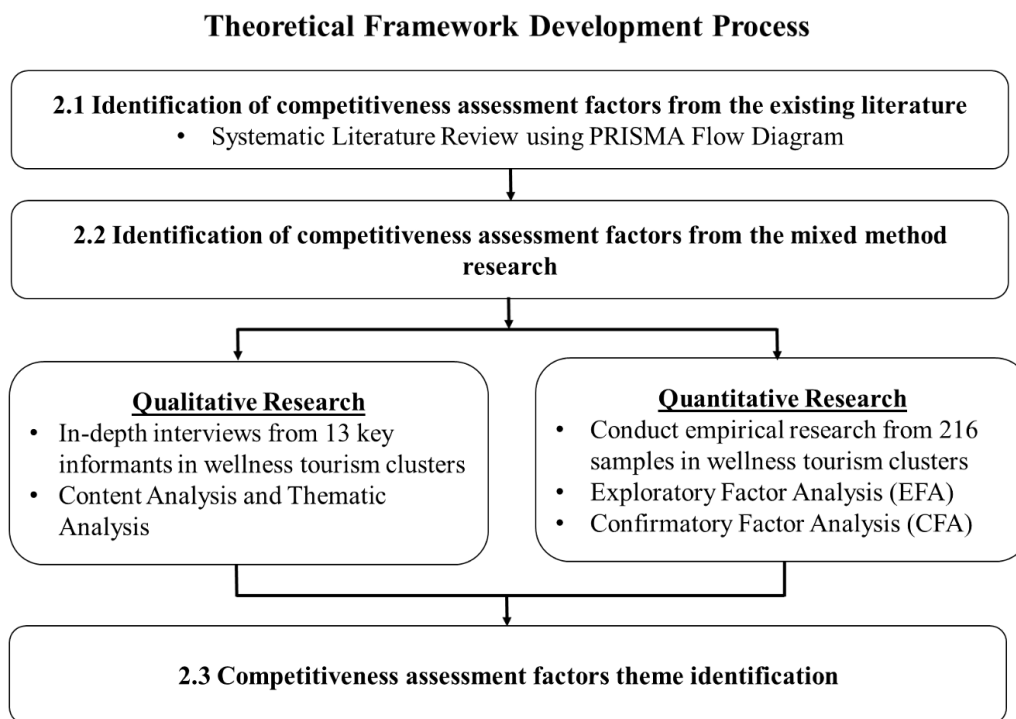


Figure 1. Theoretical Framework Development Process

2.1. Identification of Competitiveness Assessment Factors from the Existing Literature

The researchers started by reviewing literature, research articles, and academic articles related to the assessment of wellness tourism destination potential. The researchers filtered the search parameters to research published from 2018 to 2022 that must be published in English. The criteria for selecting completed documents are: 1) having content that correlates with wellness tourism destination competitiveness assessment 2) having study methods that are of good quality, pass standards, and are at no risk of being biased; 3) having complete data results 4) having appropriate research methodology; and 5) ensuring that sample groups, informants, or research participants' personal information is appropriately protected in accordance with the ethnicity of human research. This part of the research is qualitative research to find key competitiveness assessment factors and indicators of wellness tourism destinations in order to summarize into a basic conceptual framework of key competitiveness assessment factors and indicators of wellness tourism destinations using the systematic review method according to guidelines of the PRISMA mechanism [29] from the SCOPUS Database. The identified string keyword used in the search is "(TITLE-ABS-KEY (wellness) OR TITLE-ABS-KEY (health) AND TITLE-ABS-KEY (tourism) OR TITLE-ABS-KEY (competitive) OR TITLE-ABS-KEY (competitiveness) AND TITLE-ABS-KEY (assessment))", as displayed in Figure 2.

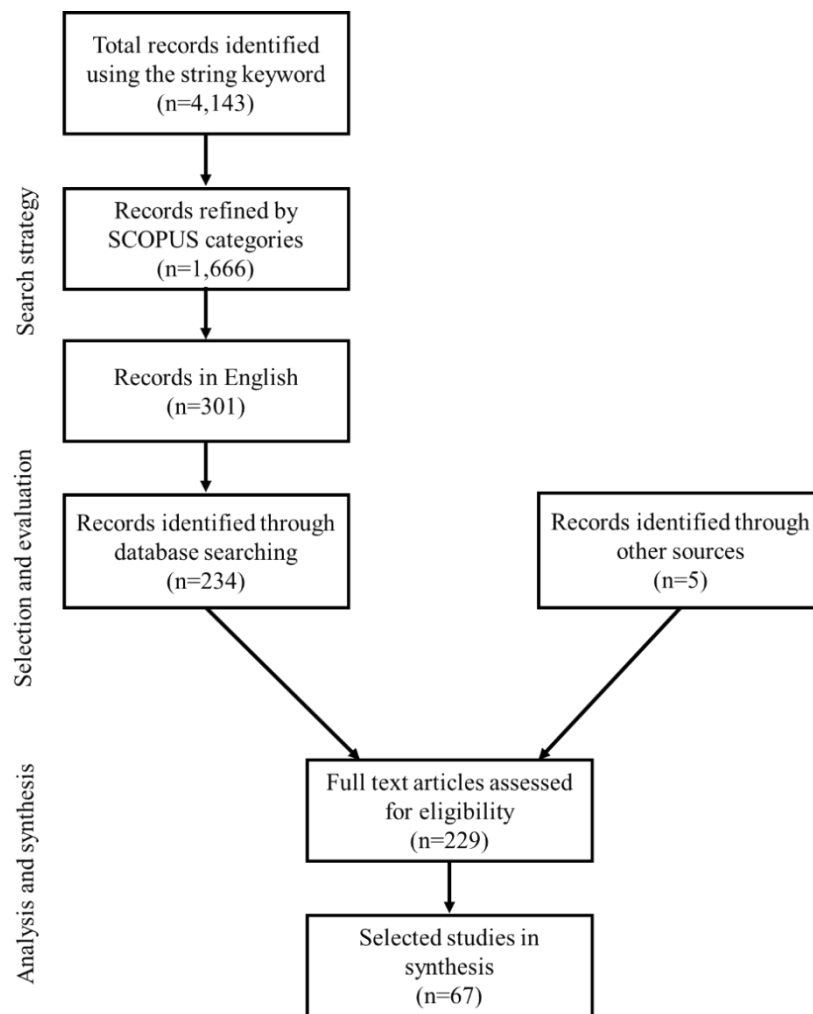


Figure 2. PRISMA mechanism for systematic review (Adapted from Moher et al. [29])

As a result of the review of literature, the researchers have synthesized a model of wellness tourism destination competitiveness assessment and proposed a conceptual framework as displayed in Table 1.

Table 1. Proposed conceptual framework synthesized from the review of literature

Assessment Factors	Indicators	Authors
Destination Environment	1. Business setting	Bilbao-Terol et al. [30], Salinas Fernández et al. [31], Gajić et al. [32], Kurek et al. [33], Portolan [34], Reisinger et al. [35], Wang et al. [36]
	2. Security and safety	Fernández et al. [31], Gajić et al. [32], Portolan [34], Reisinger et al. [35], Wang et al. [36], Añaña et al. [37], Armenski et al. [38], Garau & Pavan [39]
	3. Hygiene and health	Fernández et al. [31], Portolan [34], Reisinger et al. [35], Dunder Ege & Demir Uslu [40]
	4. Human capital and the labor market	Bilbao-Terol et al. [30], Fernández et al. [31], Portolan [34], Reisinger et al. [35], Wang et al. [36], Andrades & Dimanche [41], Hanafiah & Zulkifly [42]
	5. Availability of information and communication technology	Bilbao-Terol et al. [30], Fernández et al. [31], Portolan [34], Reisinger et al. [35], Hanafiah & Zulkifly [42]
Travel & Tourism Policy	1. Prioritization of tourism and travel	Fernández et al. [31], Portolan [34], Reisinger et al. [35], Ege and Uslu [40], Hanafiah & Zulkifly [42], Roy et al. [43]
	2. International generosity	Fernández et al. [31], Portolan [34], Reisinger et al. [35], Añaña et al. [37], Hanafiah & Zulkifly [42]
	3. Price Competition	Fernández et al. [31], Portolan [34], Reisinger et al. [35], Dunder Ege and & Demir Uslu [40], Hanafiah & Zulkifly [42], Clemes et al. [44]
	4. Long-term environmental sustainability	Bilbao-Terol et al. [30], Gajić et al. [32], Portolan [34], Reisinger et al. [35], Wang et al. [36], Armenski et al. [38], Garau & Pavan [39], Clemes et al. [44], Özen & Varolgüneş [45]

Infrastructure and Capacity	1. Infrastructure for transportation	Fernández et al. [31], Gajić et al. [32], Portolan [34], Reisinger et al. [35], Wang et al. [36], Ege & Uslu [40], Hanafiah & Zulkifly [42], Roy et al. [43], Pan et al. [46]
	2. Infrastructure for tourism services	Fernández et al. [31], Gajić et al. [32], Portolan [34], Reisinger et al. [35], Wang et al. [36], Ege & Uslu [40], Hanafiah & Zulkifly [42], Roy et al. [43], Masih et al. [47]
	3. Capacity for accommodation and facilities	Gajić et al. [32], Kurek et al. [33], Reisinger et al. [35], Añaña et al. [37], Hanafiah & Zulkifly [42], Özen & Varolgüneş [45], Lo et al. [48]
	4. Capacity for food and beverages	Reisinger et al. [35], Añaña et al. [37]
	5. Capacity for recreation and entertainment	Reisinger et al. [35], Lo et al. [48]
Man-made & Cultural Resources	1. Natural resource-based	Fernández et al. [31], Portolan [34], Reisinger et al. [35], Wang et al. [36], Añaña et al. [37], Hanafiah & Zulkifly [42], Pan et al. [46], Masih et al. [47], Lo et al. [48]
	2. Resources based on cultural and wisdom	Fernández et al. [31], Portolan [34], Reisinger et al. [35], Añaña et al. [37], Hanafiah & Zulkifly [42]
	3. Resource-based activities	Hanafiah & Zulkifly [42],
	4. Resources based on medical technology	Hanafiah & Zulkifly [42],
	5. Medical and business resources	Hanafiah & Zulkifly [42],
Wellness Strategy & Structure	1. Service and restoration quality	Gajić et al. [32], Añaña et al. [37], Garau & Pavan [39], Dundar Ege & Demir Uslu [40], Roy et al. [43], Clemes et al. [44]
	2. Wellness tourism's prestige and accreditation	Bilbao-Terol et al. [30], Reisinger et al. [35]
	3. Obtaining internationally recognized accreditation for superior medical and wellness services	Gajić et al. [32], Medical Tourism Association [49]
	4. Providing customers with a great service experience	Gajić et al. [32]
	5. Connecting wellness tourism products, services, activities, and aspects to tourists visiting the areas	Roy et al. [43]
	6. Nutritional treatment intervention	Težak Damijanić [2]
	7. Health-related physical activities 8. Meditation activities	Težak Damijanić [2]
	8. Meditation activities	Težak Damijanić [2]
	9. Hydrotherapy exercises	Težak Damijanić [2], Lo et al. [48]
	10. Mind-recovery exercises	Težak Damijanić [2]
	11 Body and beauty care, as well as healing activities	Težak Damijanić [2]
Innovation Potential	1. Expertise in developing new products, services, and wellness tourism components that are faster, cheaper, or more responsive to client needs.	Reisinger et al. [35], Armenski et al. [38]
	2. Human capital for innovative product development and service offerings	Andrades & Dimanche [41], Roy et al. [43]
	3. Service innovation exposure	Bilbao-Terol et al. [30], Armenski et al. [38]
	4. Development and presentation of innovative approaches for solving problems fast rather than using existing methods	Andrades & Dimanche [41]
	5. Using community resources, wisdom, and a distinct local identity to generate sales and add value to tourism products and services.	Andrades & Dimanche [41]
	6. Improving and creating new work processes to ensure consistent efficiency	Andrades & Dimanche [41]

Collaborative & Proactive Marketing	1. Creating integrated cluster groups for collaborative work	Armenski et al. [38]
	2. Establishing business networks or partner groups in order to connect with all stakeholders	Armenski et al. [38]
	3. Making it possible for rural communities to participate in wellness tourism planning.	Armenski et al. [38], Lo et al. [48]
	4. Forming alliances with wellness tourism/medicine organizations	Armenski et al. [38]
	5. Partnership between the public and commercial sectors	Armenski et al. [38]
	6. Promotion of wellness tourism products and services through public and private sector partners	Armenski et al. [38]
	7. Emphasizing the brand destinations' stories while adhering to community and environmental development	Gajić et al. [32]
	8. Developing appealing brand destinations for tourists	Hanafiah & Zulkifly [42]
	9. Organizing wellness tourism initiatives and events that encourage community involvement and local employment.	Hanafiah & Zulkifly [42]
	10. Developing a distinct brand identity to distinguish oneself from competition	Hanafiah & Zulkifly [42]
	11. Integrating wellness social media marketing with commercial and public relations	Hanafiah & Zulkifly [42]
	12. Creating a realistic environment for prospects, clients, and other interested parties to experience, comprehend, and picture the destinations.	Hanafiah & Zulkifly [42]
	13. Organizing regional, national, and international marketing initiatives and events	Hanafiah & Zulkifly [42]
	14. Co-creation of brand value	Indrawan et al. [50], Michopoulou et al. [51]

2.2. Identification of Competitiveness Assessment Factors from the Mixed Method Research

2.2.1. Qualitative Research

After achieving the results from studying the competitiveness assessment factors and indicators of wellness tourism destinations in the 1st phase, the research team has used the basic conceptual framework synthesized in the 1st phase for this 2nd phase of study through qualitative research to find the trend of competitiveness assessment factors and indicators of wellness tourism destinations using the grounded theory methodology [52]. The research team used the interpretivism and constructivism approaches to find new definitions or theories from the perspectives of primary informants and samples from theoretical sampling. In-depth interviews were conducted with 13 primary informants, including 3 representatives from public agencies driving and supporting wellness tourism, 5 representatives from academic institutions/professional associations/institutes, 3 representatives from all-inclusive tourism and wellness service businesses, and 2 wellness travelers and tourists. The informants have between 5 to 40 years of experience working with or involving wellness tourism businesses, with an average age of 19.38 years. Most of the informants have graduated with bachelor's degrees, worked as directors or assistant professors of academic and research institutions, are wellness tourism entrepreneurs, or are simply wellness travelers and tourists. The durations of the interviews are between 27.39 minutes to 101.50 minutes, with an average of 64.61 minutes. After the interviews, the research team performed content analysis and thematic analysis of the gathered data using the NVivo 12 computer software to analyze using node cluster analysis by coding similarity diagrams and the similarity metric of Jaccard's coefficient.

The result of the data analysis showed that the trend of competitiveness assessment factors for wellness tourism destinations consisted of seven main themes, including 1) destination image and hospitality, 2) destination strategy and roadmap for wellness tourism, 3) infrastructure and wellness tourism carrying capacity, 4) man-made and cultural resources for wellness tourism, 5) wellness service experience and activity, 6) innovative capacity of destinations, and 7) collaborative networking and destination branding. All seven main themes have content and theme attributes that are correlated with each other. In addition, the result of the content and theme analysis of sub-themes to be developed into indicators of wellness destination competitiveness assessment using the hierarchy technique has shown that 1) the main theme of destination image and hospitality consists of 6 sub-themes, 2) the main theme of destination strategy and roadmap for wellness tourism consists of 4 sub-themes, 3) the main theme of infrastructure and wellness tourism carrying capacity consists of 5 sub-themes, 4) the main theme of man-made and cultural resources for wellness tourism consists of 4 sub-themes, 5) the main theme of wellness service experience and activity consists of 8 sub-themes, 6) the main theme of innovative capacity of destinations consists of 5 sub-themes, and 7) the main theme of collaborative networking and destination branding consists of 9 sub-themes, as displayed in Table 2.

Table 2. Summary of competitiveness assessment factors and indicators of wellness tourism destinations

Assessment Factors	Indicators	References Counts	Factor Loading
C1 Destination image and hospitality (Cronbach's Alpha = 0.898)			
	I1 Business environment that promotes wellness tourism business	42	0.804
	I2 Safety and security of the destination	30	0.853
	I3 Health and hygiene management in wellness tourism areas or destinations	27	0.803
	I4 Human resource readiness of personnel working in wellness tourism establishments or businesses with a responsibility of providing products and services to tourists	26	0.711
	I5 Human resource readiness of local people with a responsibility of being good hosts to welcome wellness tourists	21	0.768
	I6 Information technology and communication readiness	29	0.618
C2 Destination strategy and roadmap for wellness tourism (Cronbach's Alpha = 0.885)			
	I7 Placing importance on travel, tourism, and wellness services	36	0.779
	I8 Opening up to the world specifically to promote wellness tourism	20	0.856
	I9 Capacity for determining the price level of wellness products and services	28	0.816
	I10 Creating an environmentally friendly experience in destination areas	25	0.777
C3 Infrastructure and wellness tourism carrying capacity (Cronbach's Alpha = 0.870)			
	I11 Transportation infrastructures that are ready to support wellness tourism	34	0.679
	I12 Infrastructures that support services and tourism	28	0.822
	I13 Capacity for supporting venues, accommodations, and facilities	17	0.772
	I14 Capacity for catering support	15	0.669
	I15 Capacity for supporting recreation and entertainment	20	0.707
C4 Man-made and cultural resources for wellness tourism (Cronbach's Alpha = 0.841)			
	I16 Natural tourist attraction readiness	22	0.725
	I17 Cultural and intellectual tourist attraction readiness	29	0.694
	I18 Resources that accommodate the development of tourist attractions and routes or the establishment of new activities to meet the needs of wellness tourists	34	0.687
	I19 Readiness of resources in promoting tourist health	29	0.693
C5 Wellness service experience and activities (Cronbach's Alpha = 0.926)			
	I20 Strategies to improve the quality of service and restoration	16	0.773
	I21 Promoting tourist attractions' fame and certification awards	24	0.733
	I22 Planning a strategy of providing services to give a satisfying customer experience	13	0.732
	I23 Connecting various products, services, activities, and elements of wellness tourism to tourists at their destinations	29	0.835
	I24 Tourist attractions offer therapeutic and beauty activities	16	0.732
	I25 Tourist attractions offer healthy body activities	19	0.709
	I26 Tourist attractions offer healthy mind activities	27	0.791
	I27 Tourist attractions offer activities to educate on the local community's way of life	31	0.704
C6 Innovative capacity of destinations (Cronbach's Alpha = 0.922)			
	I28 Knowledge on developing new products and services, as well as activities and elements of wellness tourism that are of high speed and high quality	27	0.901
	I29 Knowledge on meeting the needs of customers or tourists as much as possible	31	0.825
	I30 Human capital for developing new products and services	18	0.919
	I31 Acceptance of service innovation	33	0.894
	I32 Creating new wellness products or services using community resources based on the distinctive local way of life and identity	10	0.780
C7 Collaborative networking and destination branding (Cronbach's Alpha = 0.954)			
	I33 Creation of cluster groups for the purpose of collaboration that can be communicated to all stakeholders	17	0.911
	I34 Allowing or supporting the local communities to participate in planning wellness tourism	22	0.842
	I35 Collaboration between public and private agencies	25	0.792
	I36 Marketing of wellness products and services jointly with allies from public and private agencies on regional, national, and international levels	30	0.801
	I37 Building brands for destinations to allure tourists	16	0.839
	I38 Creating brand identity to be more memorable than the competition	19	0.845
	I39 Communicating marketing for advertising and public relations jointly with online social media on wellness	27	0.818
	I40 Simulating the environment in real locations for target customers and interested individuals to experience, understand, and have a transparently clear picture of wellness tourism destinations	11	0.855
	I41 Jointly building the brand values	11	0.839

2.2.2. Quantitative Research

After achieving the results of qualitative research, the research team used the main themes and sub-themes of competitiveness assessment factors and indicators of wellness tourism destinations to be developed into a research question to set up a questionnaire for quantitative research in the framework of wellness tourism destination competitiveness assessment. Following that, the researchers gave the formulated questionnaire to five academic dignitaries and scholars on wellness tourism for consideration and to find the index of item-objective congruence (IOC) per the experts' suggestions. According to the calculation of the IOC of the research question, it is found that the research question has an IOC value between 0.60–1.00, with the IOC of the entire questionnaire at a value of 0.86. This reflected that the research question is of quality and in accordance with the objectives of the research [53] and that the formulated questionnaire can be used for the research itself. Consequently, the questionnaire was tested with 30 non-sample wellness tourism entrepreneurs to find discrimination values for each individual item by finding the item-total correlation value of the entire questionnaire, which should be more than 0.4, and Cronbach's alpha coefficient value [54], which should be over 0.7.

The result showed that all items had item-total correlation values greater than 0.4, and the reliability test using Cronbach's alpha coefficient method showed that all variables passed the stipulated minimum threshold, with values between 0.718–0.926. Then, the researchers selected the data from the aforementioned sample group, consisting of 216 samples, to conduct exploratory factor analysis. The result showed that the KMO (Kaiser-Meyer-Olkin test of sampling adequacy) value is 0.937 and is close to 1 (more than 0.5 and close to 1). This shows a good level of suitability of all the data used in the factor analysis, as the KMO value is considerably high. Additionally, according to Bartlett's test of sphericity, it was found that the variables have a significant correlation (Chi-Square = 6920.207, $df = 820$, $P\text{-value} < 0.01$). This shows that the correlation matrices of the variables have a correlation with each other and are suitable to conduct the factor analysis. Using a factor analysis technique, the research team grouped the variables and decreased the number of factors with a statistical method called principal component factor analysis, which employs varimax rotation. For this research, the threshold for the number of factors was decided using eigenvalue, which must be higher than 1, and factor loading, which must have a value of more than 0.5.

The analysis result showed that the factors can be classified into seven groups, as follows: 1) destination image and hospitality; 2) destination strategy and roadmap for wellness tourism 3) infrastructure and wellness tourism carrying capacity 4) man-made and cultural resources for wellness tourism 5) wellness service experience and activity 6) innovative capacity of destinations; and 7) collaborative networking and destination branding.

Following that, the research team analyzed the correlation between the factor variables of wellness tourism destination competitiveness with Pearson's product moment correlation coefficient values between 0 to ± 1 , which is a process before the confirmatory factor analysis to examine whether the correlation between variables is in accordance with the established hypothesis. The analysis result showed that the Pearson's product moment correlation coefficient values of all variable pairs have a positive correlation ($P < 0.01$) with values between 0.385 to 0.859. When considering the suitability in terms of multicollinearity, it was found that the correlation coefficient value between 1 pair of variables is over 0.850 (the absolute value), which may affect multicollinearity.

This led to a test of the independence of these variables using the KMO value and Bartlett's test of sphericity values to examine the suitability of the variables. The test result showed that the KMO value is 0.761 and more than 0.5, and Bartlett's test of sphericity values is statistically significant ($\chi^2 = 737.849$, $df = 21$, $Sig = 0.000$). This showed that these synthetic variables have no multicollinearity issues and are thus suitable to be used in the following confirmatory factor analysis.

From the result of the confirmatory factor analysis, which is done to analyze the structural equation modeling by testing the correlation of the wellness tourism destination competitiveness assessment model in accordance with the empirical data, it was found that the model has a correlation with the empirical data due to the overall model fit measure. When considering the statistics assessing the overall model fit measure with empirical data, it was found that the absolute fit indices relative Chi-square: χ^2/df value equals 1.031, passing the stipulated threshold, which is lower than 5 [55]. When considering the group of indices with values greater than or equal to 0.90, it was found that all indices, including the Tucker-Lewis index (TLI) (value of 0.996) and comparative fit index (CFI) (value of 0.997), passed the stipulated thresholds [55, 56]. As for the group of indices with values lower than 0.08, it was found that all indices, including standardized root mean square residual (SRMR) (value of 0.023) and root mean square error of approximation (RMSEA) (value of 0.014), passed the stipulated threshold as well [56]. Therefore, the research hypothesis that the developed wellness tourism destination competitiveness assessment model fits with empirical data was accepted.

2.2.3. Competitiveness Assessment Factor Theme Identification

The result of the study to identify competitiveness assessment factors from the mixed-methods research can be summarized as displayed in Table 2.

3. DEMATEL Method Approach

This is quantitative research done using the themes identified from the development of a theoretical framework, the identification of competitiveness assessment factors from the existing literature, and the mixed-methods research processes. The theme identification method is used to 1) identify and prioritize the significant competitiveness factors that need to be considered in the context of wellness tourism destinations and 2) identify the causal interrelationships between competitiveness factors that need to be considered in the context of wellness tourism destinations according to the DEMATEL method approach, as displayed in Figure 3.

Conceptual Framework for Developing a DEMATEL Method-Based Model

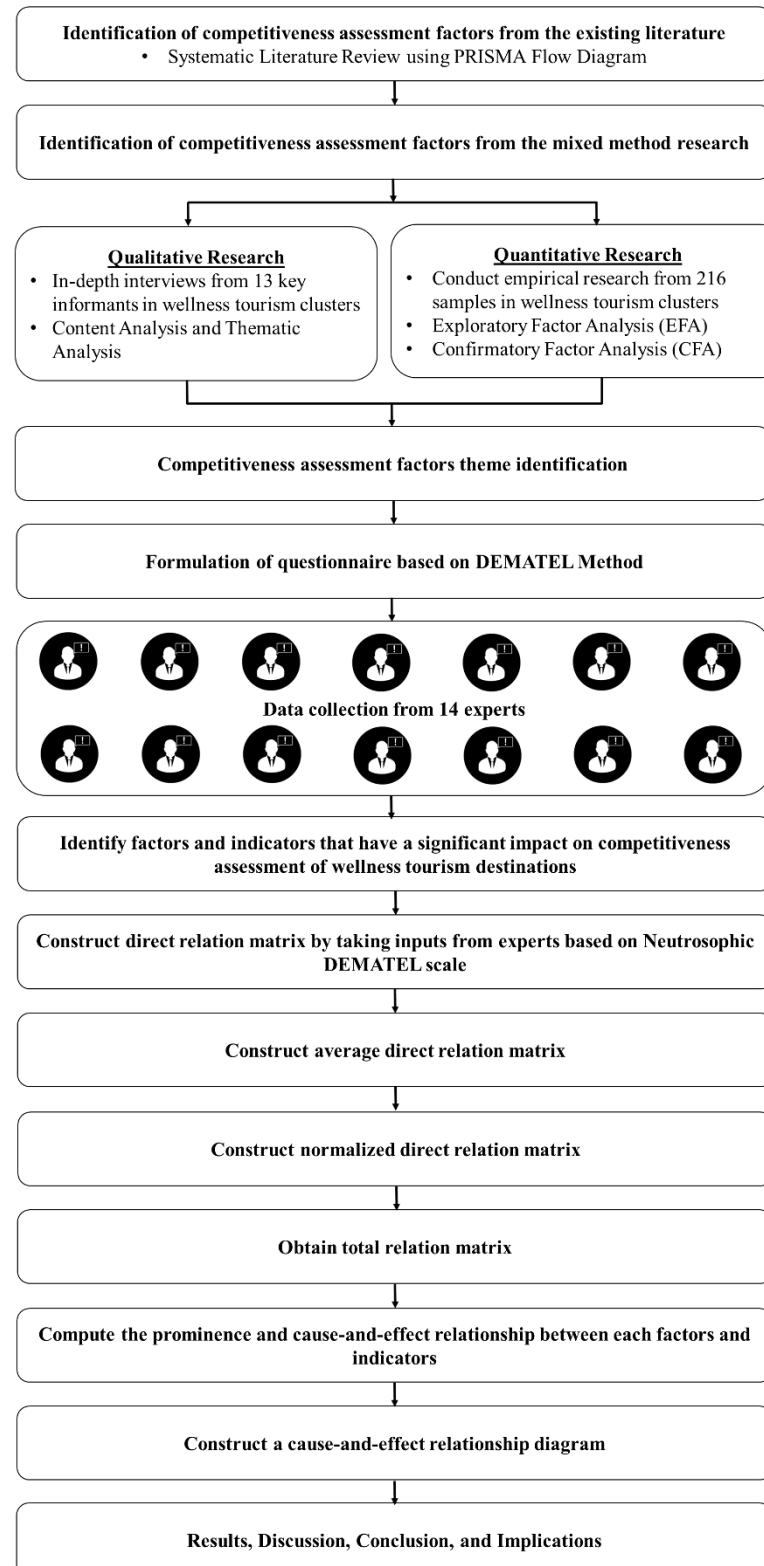


Figure 3. Research methodology flowchart

In this research, the DEMATEL method is employed with the following steps:

• **Step 1: Construct a direct relation average matrix (A):**

Experts conducted a pairwise evaluation of the detected parameters to estimate the influence potential of one parameter over others. Each expert defined their responses in the matrices by utilizing the five-level linguistic terms [57] of Table 3, indicating that each parameter (i) can have five levels of impact (0 to 4) over every other parameter (j).

Table 3. Linguistic assessment and scale

Linguistic assessment	Numerical value
Very high influence	4
High influence	3
Low influence	2
Very low influence	1
No influence	0

The experts' responses result in the construction of a non-negative matrix ($n \times n$). After considering all of the experts' feedback, an average direct relation matrix (A) is created, which is a ($n \times n$) matrix, where n is the number of recognized parameters while 'i' and 'j' represent row and column, respectively.

$$A = \begin{bmatrix} 0 & a_{12} & \cdots & a_{1n} \\ a_{21} & 0 & \cdots & a_{2n} \\ \cdots & \vdots & \ddots & \vdots \\ a_{n1} & a_{n2} & \cdots & 0 \end{bmatrix}$$

Using Equation 1, the experts compute the average initial direct-relation matrix (A), where matrix A (average initial direct-relation matrix) = $[a_{ij}]$.

$$A = a_{ij} = \frac{1}{H} \sum_{k=1}^H X_{ij}^k \quad (1)$$

where H is refers to the number of experts, n is referring to the number of factors, k is referring to the number of respondents questioned, and X_{ij}^k is refers to the degree of influence of criterion i on criterion j in relation to the kth expert.

• **Step 2: Construct a normalized direct relation matrix (N):**

The determined direct relation matrix (A) is then multiplied by a factor of F to generate a ($n \times n$) normalized direct relation matrix (N). Equation 2 is used to calculate the value of factor F, and Equation 3 is used to calculate the normalized direct relation matrix (N).

$$F = \min \left\{ \frac{1}{\max_i \sum_{j=1}^n |a_{ij}|}, \frac{1}{\max_j \sum_{i=1}^n |a_{ij}|} \right\} \quad (2)$$

$$N = F * A \quad (3)$$

The normalized direct relation matrix (N) has entries with values ranging from 0 to 1, with the principal diagonal elements having a value of 0.

• **Step 3: Determine the total relation matrix (T):**

The total relation matrix (T) represents the total number of relationships between all pairs of identified attributes. Equation 4 is used to compute the matrix T, and element t_{ij} of matrix T represents the indirect influence that parameter 'i' has over parameter 'j'. The indirect influence decreases indefinitely along the powers of T:

$$T = N + N^2 + N^3 + \cdots + N^k = N(I + N + N^2 + \cdots + N^{k-1})$$

$$[(I - N)(I - N)^{-1}] = N(I - N)^{-1}(I - N^k)$$

Thus when $\lim_{k \rightarrow \infty} N^k = [0_{n \times n}]$

$$T = N(I - N)^{-1} \quad (4)$$

where I is a $n \times n$ identity matrix.

• **Step 4: Calculate the sums of the rows and columns of the Total Relation Matrix (T):**

The sums of matrix T's rows and columns are calculated using Equations 5 and 6 and are represented by vectors 'r' and 'c', respectively. R_i is the sum of the ith row and represents the direct and indirect impacts of parameter 'i' on other

parameters. C_j is the sum of the j th column and represents the direct and indirect effects of other parameters on parameter ' j '.

$$R=(R_i)_{n \times 1} = \left[\sum_{j=1}^n t_{ij} \right]_{n \times 1} \quad (5)$$

$$C=(C_j)_{1 \times n} = \left[\sum_{i=1}^n t_{ij} \right]_{1 \times n} \quad (6)$$

• **Step 5: Determine the threshold value (α):**

The objective of determining the threshold value is to remove some minor effect elements from the Total Relation Matrix (T) [58]. As a result, entries in matrix T with values less than the threshold value are removed, and the remaining elements are used to create the cause-effect relationship diagram. The threshold value is calculated as the average of all the elements in matrix T using Equation 7.

$$\alpha = \frac{\sum_{i=1}^n \sum_{j=1}^n [t_{ij}]}{N} \quad (7)$$

• **Step 6: Construct a cause-and-effect relationship diagram:**

The vectors R and C calculated in step 4 are used to create the cause-effect relationship diagram. The horizontal axis (R+C) represents the significance of the identified factors, while the vertical axis (R-C) separates the parameters into cause-and-effect groups. If R-C is negative, the parameter is in the effect group and is affected by other parameters. If R-C is positive, it suggests that a particular value is a cause parameter and considerably influences other parameters. Thus, the cause-effect relationship diagram illustrates influential parameters and the relative importance of one parameter over others.

4. Results

The analysis results from the multiple criteria decision-making using the DEMATEL method can be described as follows:

4.1. Data Results Gathered from Experts to Prioritize and Analyze the Cause-and-Effect Relationship of the Assessment Factor Groups

The results of inquiring for opinions of experts regarding the wellness tourism destination competitiveness assessment are used to prioritize and weight the component factor groups per pairwise correlation in the matrix to give the assessment a correct impact and direction between its 7 factors and their respective indicators. This was done using linguistic assessment and scale through the DEMATEL method by gathering and collecting assessment results from experts who worked in the wellness tourism business network (cluster) and have at least 5 years of experience in managing wellness tourism business or related researches, separated into a group of 8 academic institution experts/scholars/researchers in the wellness tourism field, and a group of 6 personnel working within the wellness industry field, as displayed in Table 4.

Table 4. Demographics of experts

Order No.	Group	Job Title	Work Experience with Wellness Tourism (Years)
1	Academic institution experts/scholars/researchers on wellness tourism	Assoc. Prof. Dr./Course Director of a Master's degree program in Tourism Management	5
2		Asst. Prof. in Hospitality and Tourism Management	6
3		Asst. Prof. Dr. in Integrated Tourism Management	5
4		Lecturer Dr. in Tourism	6
5		Assoc. Prof. Dr. in Hospitality and Tourism Management	9
6		Assoc. Prof. Dr. in Sport and Adventure Tourism	10
7		Assoc. Prof. Dr. in Tourism Management	6
8		Asst. Prof. Dr. in Tourism Industry Management	25
9	Wellness industry personnel	Chairman of a federation	22
10		Director	5
11		Business owner	6
12		Business owner	5
13		Business owner	7
14		Club president/business owner	40

• **Step 1: Creation of direct relation average matrix (A):**

The researchers used the results from inquiring about the significance of component factor groups of the wellness tourism destination competitiveness assessment to analyze and find the weighted significance and weighted prioritization, and to analyze the cause-and-effect relationships of component factors of the wellness tourism destination competitiveness assessment. The analysis results from inquiring for opinions of experts regarding the wellness tourism destination competitiveness assessment showed the average initial direct-relation matrix (A) as displayed in Table 5 and the average direct relation matrix (A) as displayed in Table 6.

Table 5. Comparison of the component factor groups of the wellness tourism destination competitiveness assessment using the pairwise comparison principle

X^1	$\begin{matrix} & C1 & C2 & C3 & C4 & C5 & C6 & C7 \\ \begin{matrix} 0 & 3 & 3 & 3 & 3 & 2 & 3 \\ 3 & 0 & 3 & 3 & 3 & 2 & 2 \\ 3 & 3 & 0 & 3 & 3 & 2 & 2 \\ 3 & 3 & 3 & 0 & 3 & 3 & 3 \\ 2 & 3 & 3 & 3 & 0 & 3 & 2 \\ 2 & 2 & 2 & 2 & 3 & 0 & 3 \\ 2 & 2 & 2 & 3 & 3 & 4 & 0 \end{matrix} \end{matrix}$	X^2	$\begin{matrix} & C1 & C2 & C3 & C4 & C5 & C6 & C7 \\ \begin{matrix} 0 & 4 & 4 & 4 & 3 & 3 & 3 \\ 4 & 0 & 4 & 2 & 3 & 3 & 4 \\ 4 & 4 & 0 & 4 & 3 & 3 & 3 \\ 3 & 3 & 2 & 0 & 3 & 3 & 4 \\ 3 & 4 & 4 & 2 & 0 & 3 & 4 \\ 4 & 3 & 2 & 2 & 2 & 0 & 4 \\ 4 & 3 & 4 & 3 & 4 & 3 & 0 \end{matrix} \end{matrix}$	X^3	$\begin{matrix} & C1 & C2 & C3 & C4 & C5 & C6 & C7 \\ \begin{matrix} 0 & 4 & 4 & 4 & 4 & 4 & 4 \\ 4 & 0 & 4 & 4 & 4 & 4 & 4 \\ 4 & 4 & 0 & 4 & 4 & 4 & 4 \\ 4 & 4 & 4 & 0 & 4 & 4 & 4 \\ 4 & 4 & 4 & 4 & 0 & 4 & 4 \\ 4 & 4 & 4 & 4 & 4 & 0 & 4 \\ 4 & 4 & 4 & 4 & 4 & 4 & 0 \end{matrix} \end{matrix}$	X^4	$\begin{matrix} & C1 & C2 & C3 & C4 & C5 & C6 & C7 \\ \begin{matrix} 0 & 3 & 4 & 4 & 3 & 3 & 4 \\ 3 & 0 & 3 & 4 & 3 & 3 & 3 \\ 4 & 4 & 0 & 4 & 4 & 4 & 4 \\ 4 & 3 & 3 & 0 & 3 & 3 & 3 \\ 4 & 4 & 3 & 3 & 0 & 3 & 3 \\ 4 & 4 & 4 & 4 & 4 & 0 & 4 \\ 3 & 4 & 4 & 4 & 3 & 4 & 0 \end{matrix} \end{matrix}$
X^5	$\begin{matrix} & C1 & C2 & C3 & C4 & C5 & C6 & C7 \\ \begin{matrix} 0 & 3 & 3 & 3 & 4 & 3 & 3 \\ 3 & 0 & 4 & 3 & 4 & 3 & 4 \\ 3 & 4 & 0 & 3 & 3 & 2 & 4 \\ 3 & 4 & 3 & 0 & 3 & 2 & 4 \\ 4 & 3 & 3 & 4 & 0 & 3 & 3 \\ 3 & 4 & 3 & 3 & 3 & 0 & 4 \\ 3 & 4 & 2 & 3 & 3 & 3 & 0 \end{matrix} \end{matrix}$	X^6	$\begin{matrix} & C1 & C2 & C3 & C4 & C5 & C6 & C7 \\ \begin{matrix} 0 & 4 & 4 & 4 & 3 & 2 & 2 \\ 4 & 0 & 4 & 3 & 3 & 2 & 3 \\ 4 & 4 & 0 & 3 & 2 & 3 & 2 \\ 4 & 3 & 3 & 0 & 4 & 4 & 2 \\ 2 & 3 & 3 & 4 & 0 & 4 & 4 \\ 2 & 2 & 3 & 4 & 4 & 0 & 3 \\ 2 & 3 & 2 & 2 & 4 & 3 & 0 \end{matrix} \end{matrix}$	X^7	$\begin{matrix} & C1 & C2 & C3 & C4 & C5 & C6 & C7 \\ \begin{matrix} 0 & 4 & 4 & 4 & 4 & 4 & 3 \\ 4 & 0 & 4 & 4 & 4 & 4 & 3 \\ 4 & 4 & 0 & 4 & 4 & 4 & 3 \\ 4 & 4 & 4 & 0 & 4 & 3 & 4 \\ 4 & 4 & 4 & 4 & 0 & 3 & 3 \\ 3 & 3 & 3 & 3 & 3 & 0 & 3 \\ 4 & 4 & 4 & 4 & 4 & 4 & 0 \end{matrix} \end{matrix}$	X^8	$\begin{matrix} & C1 & C2 & C3 & C4 & C5 & C6 & C7 \\ \begin{matrix} 0 & 3 & 2 & 3 & 2 & 3 & 4 \\ 3 & 0 & 3 & 3 & 3 & 3 & 4 \\ 2 & 2 & 0 & 3 & 2 & 3 & 2 \\ 2 & 2 & 2 & 0 & 2 & 3 & 3 \\ 2 & 3 & 2 & 3 & 0 & 3 & 2 \\ 3 & 3 & 3 & 3 & 3 & 0 & 3 \\ 3 & 4 & 4 & 3 & 4 & 4 & 0 \end{matrix} \end{matrix}$
X^9	$\begin{matrix} & C1 & C2 & C3 & C4 & C5 & C6 & C7 \\ \begin{matrix} 0 & 3 & 4 & 3 & 4 & 3 & 3 \\ 3 & 0 & 3 & 2 & 4 & 3 & 3 \\ 4 & 3 & 0 & 3 & 3 & 3 & 3 \\ 4 & 2 & 3 & 0 & 3 & 3 & 3 \\ 4 & 4 & 3 & 3 & 0 & 3 & 3 \\ 3 & 3 & 3 & 3 & 3 & 0 & 3 \\ 3 & 3 & 3 & 3 & 3 & 3 & 0 \end{matrix} \end{matrix}$	X^{10}	$\begin{matrix} & C1 & C2 & C3 & C4 & C5 & C6 & C7 \\ \begin{matrix} 0 & 4 & 3 & 2 & 3 & 3 & 4 \\ 3 & 0 & 3 & 3 & 3 & 3 & 4 \\ 2 & 3 & 0 & 2 & 3 & 3 & 4 \\ 2 & 3 & 2 & 0 & 2 & 3 & 3 \\ 3 & 3 & 3 & 2 & 0 & 3 & 3 \\ 2 & 3 & 2 & 2 & 3 & 0 & 4 \\ 3 & 3 & 3 & 2 & 3 & 4 & 0 \end{matrix} \end{matrix}$	X^{11}	$\begin{matrix} & C1 & C2 & C3 & C4 & C5 & C6 & C7 \\ \begin{matrix} 0 & 3 & 3 & 3 & 3 & 3 & 3 \\ 3 & 0 & 3 & 3 & 3 & 3 & 3 \\ 3 & 3 & 0 & 3 & 3 & 3 & 3 \\ 3 & 3 & 3 & 0 & 3 & 3 & 3 \\ 4 & 4 & 4 & 4 & 0 & 4 & 3 \\ 3 & 3 & 3 & 3 & 3 & 0 & 3 \\ 3 & 3 & 3 & 3 & 3 & 3 & 0 \end{matrix} \end{matrix}$	X^{12}	$\begin{matrix} & C1 & C2 & C3 & C4 & C5 & C6 & C7 \\ \begin{matrix} 0 & 3 & 3 & 3 & 3 & 3 & 3 \\ 3 & 0 & 4 & 4 & 3 & 3 & 3 \\ 3 & 3 & 0 & 3 & 3 & 3 & 3 \\ 3 & 3 & 3 & 0 & 3 & 3 & 3 \\ 3 & 3 & 3 & 3 & 0 & 3 & 3 \\ 3 & 3 & 3 & 3 & 3 & 0 & 3 \\ 3 & 3 & 3 & 3 & 3 & 3 & 0 \end{matrix} \end{matrix}$
X^{13}	$\begin{matrix} & C1 & C2 & C3 & C4 & C5 & C6 & C7 \\ \begin{matrix} 0 & 3 & 4 & 3 & 4 & 1 & 3 \\ 3 & 0 & 4 & 2 & 3 & 2 & 4 \\ 4 & 4 & 0 & 1 & 2 & 3 & 2 \\ 3 & 2 & 1 & 0 & 1 & 1 & 3 \\ 4 & 3 & 2 & 1 & 0 & 4 & 3 \\ 1 & 2 & 3 & 1 & 4 & 0 & 2 \\ 3 & 2 & 2 & 3 & 3 & 2 & 0 \end{matrix} \end{matrix}$	X^{14}	$\begin{matrix} & C1 & C2 & C3 & C4 & C5 & C6 & C7 \\ \begin{matrix} 0 & 3 & 3 & 3 & 3 & 4 & 4 \\ 4 & 0 & 4 & 3 & 4 & 3 & 4 \\ 3 & 3 & 0 & 3 & 3 & 3 & 4 \\ 3 & 3 & 3 & 0 & 3 & 4 & 3 \\ 3 & 3 & 3 & 3 & 0 & 3 & 4 \\ 3 & 3 & 3 & 3 & 4 & 0 & 4 \\ 4 & 4 & 3 & 3 & 4 & 3 & 0 \end{matrix} \end{matrix}$				

Table 6. Direct relation average matrix (A)

	C1	C2	C3	C4	C5	C6	C7
C1	0.0000	3.3571	3.4286	3.2857	3.2857	2.9286	3.2857
C2	3.3571	0.0000	3.5714	3.0714	3.3571	2.9286	3.4286
C3	3.3571	3.4286	0.0000	3.0714	3.0000	3.0714	3.0714
A = C4	3.2143	3.0000	2.7857	0.0000	2.9286	3.0000	3.2143
C5	3.2857	3.4286	3.1429	3.0714	0.0000	3.2857	3.1429
C6	2.8571	3.0000	2.9286	2.8571	3.2857	0.0000	3.3571
C7	3.1429	3.2857	3.0714	3.0714	3.4286	3.3571	0.0000

• **Step 2: Creation of normalized direct relation matrix (N):**

After receiving the score values, they are subsequently edited by establishing relationships between score values with matrix (A). The result of calculating matrix (N) per Equation 1 is as displayed in Table 7.

Table 7. Normalized direct relation matrix (N)

	C1	C2	C3	C4	C5	C6	C7
N = C1	0.0000	0.1703	0.1739	0.1667	0.1667	0.1486	0.1667
C2	0.1703	0.0000	0.1812	0.1558	0.1703	0.1486	0.1739
C3	0.1703	0.1739	0.0000	0.1558	0.1522	0.1558	0.1558
C4	0.1630	0.1522	0.1413	0.0000	0.1486	0.1522	0.1630
C5	0.1667	0.1739	0.1594	0.1558	0.0000	0.1667	0.1594
C6	0.1449	0.1522	0.1486	0.1449	0.1667	0.0000	0.1703
C7	0.1594	0.1667	0.1558	0.1558	0.1739	0.1703	0.0000

Each element in the normalized direct relation matrix (N) holds a value ranging from 0 to 1 with the major diagonal elements being 0.

• **Step 3: Calculation of total relation matrix (T):**

From direct relation values of matrix (N), calculations could be made to find the total relation matrix (T) from Equations 6 and 7. The result of the calculation of total relation matrix (T) is as displayed in Table 8.

Table 8. Total relation matrix (T)

	C1	C2	C3	C4	C5	C6	C7
T = C1	4.2394	4.4401	4.3360	4.2317	4.3966	4.2453	4.4348
C2	4.4136	4.3236	4.3697	4.2512	4.4280	4.2732	4.4690
C3	4.2787	4.3351	4.0831	4.1212	4.2795	4.1475	4.3194
C4	4.1098	4.1534	4.0454	3.8289	4.1130	3.9864	4.1594
C5	4.3417	4.4017	4.2855	4.1846	4.2134	4.2195	4.3887
C6	4.1240	4.1816	4.0781	3.9821	4.1543	3.8815	4.1927
C7	4.3351	4.3952	4.2815	4.1834	4.3606	4.2213	4.2500

• **Step 4: Determination of sums of rows and columns of total relation matrix (T):**

The next step is to calculate for the 'R' or sums of rows value, and the 'C' or sums of columns (values) of matrix (T), then use the 'R' and 'C' values to find the (R+C) value for prioritization, and the (R-C) value for cause-and-effect relationship grouping. These values are as displayed in Table 9.

Table 9. Analysis results of the weights, priorities, and cause-and-effect values of component factors of the wellness tourism destination competitiveness assessment

Assessment Factors	R	C	R+C	Rank(R+C)	R-C	Cause-and-effect (R-C)
C1	30.3239	29.8424	60.1663	3	0.4815	Cause
C2	30.5283	30.2307	60.7590	1	0.2977	Cause
C3	29.5646	29.4793	59.0439	4	0.0853	Cause
C4	28.3964	28.7831	57.1795	6	-0.3867	Effect
C5	30.0351	25.5849	55.6200	7	4.4502	Cause
C6	28.5944	28.9748	57.5692	5	-0.3805	Effect
C7	30.0272	30.2141	60.2413	2	-0.1869	Effect

• **Step 5: Calculation of threshold value (α):**

The researchers created a threshold value (α) to determine to direction of relations and eliminate some values that are minor effects in matrix (T) by calculating the sum of matrix (T) to compare with elements within matrix (T) per Equation 7. The results are as follows:

$$= 207.4699/49$$

$$= 4.2341$$

• **Step 6: Development of causal diagram:**

The researchers created a cause-and-effect relationship diagram with (R+C) values, which display the factor priorities whose rankings depend on the values from the calculations, and (R-C) values, which are used to classify the factors into the ‘cause’ group and the ‘effect’ group. A factor is put into the ‘cause’ group when the (R-C) axis has a positive value and a factor is put into the ‘effect’ group when the (R-C) axis has a negative value. The direction of the cause-and-effect relationships of the component factors of the wellness tourism destination competitiveness assessment are as displayed in Figure 4 and the relationships can be summarized as in Table 10.

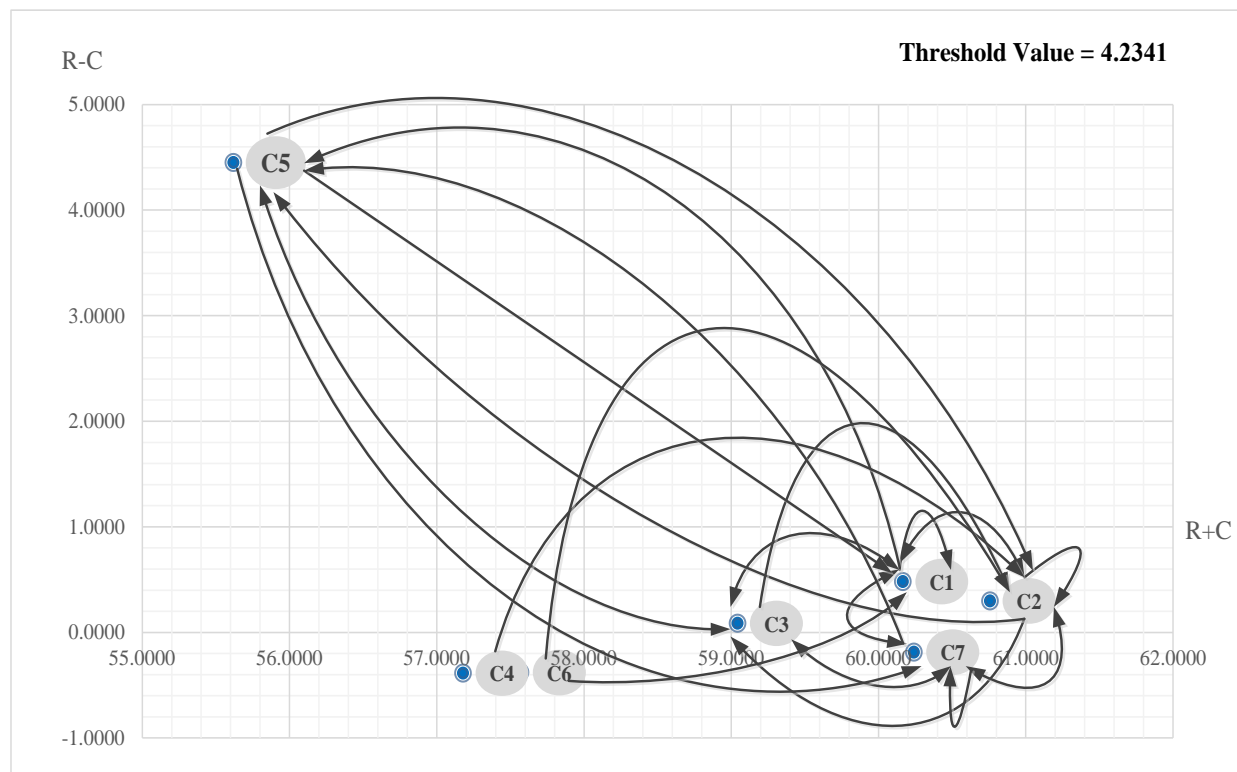


Figure 4. Cause-and-effect relationship diagram of the component factors of the wellness tourism destination competitiveness assessment

Table 10. Summary of the cause-and-effect relationships of the component factors of the wellness tourism destination competitiveness assessment

Source of effect	Relations with other components
C1 Destination image and hospitality	C1 → C1; C1 → C2; C1 → C3; C1 → C5; C1 → C7
C2 Destination strategy and roadmap for wellness tourism	C2 → C1; C2 → C2; C2 → C3; C2 → C5; C2 → C7
C3 Infrastructure and wellness tourism carrying capacity	C3 → C1; C3 → C2; C3 → C5; C3 → C7
C4 Manmade and cultural resources for wellness tourism	C4 → C2
C5 Wellness service experience and activities	C5 → C1; C5 → C2; C5 → C3; C5 → C7
C6 Innovative capacity of destinations	C6 → C1; C6 → C2
C7 Collaborative networking and destination branding	C7 → C1; C7 → C2; C7 → C3; C7 → C5; C7 → C7

4.2. Data Results Gathered from Experts to Prioritize and Analyze the Cause-And-Effect Relationship of the Indicators of the 7 Assessment Factors

The analysis results of the weights, priorities, and cause-and-effect values of the indicators of the 7 assessment factors are as displayed in Table 11.

Table 11. Analysis results of the weights, priorities, and cause-and-effect values of the indicators of the 7 assessment factors

Assessment Factors	Indicators	R	C	R+C	Rank (R+C)	R-C	Cause-and- effect (R-C)
C1 Destination image and hospitality	I1	17.6173	17.7475	35.3648	2	-0.1303	Effect
	I2	17.5155	17.8228	35.3383	3	-0.3073	Effect
	I3	17.5238	17.7130	35.2367	4	-0.1892	Effect
	I4	18.1873	17.8224	36.0098	1	0.3649	Cause
	I5	17.3736	16.7801	34.1537	5	0.5936	Cause
	I6	15.7829	16.1145	31.8974	6	-0.3317	Effect
C2 Destination strategy and roadmap for wellness tourism	I7	19.8405	19.4207	39.2612	2	0.4197	Cause
	I8	19.9298	19.5229	39.4527	1	0.4069	Cause
	I9	18.6000	18.9083	37.5083	3	-0.3083	Effect
C3 Infrastructure and wellness tourism carrying capacity	I10	18.2799	18.7982	37.0781	4	-0.5183	Effect
	I11	18.9042	18.6370	37.5412	1	0.2673	Cause
	I12	18.8076	18.7205	37.5281	3	0.0871	Cause
	I13	19.0465	18.4850	37.5315	2	0.5615	Cause
	I14	17.6734	17.6656	35.3390	4	0.0078	Cause
	I15	16.5513	17.4750	34.0263	5	-0.9236	Effect
C4 Man-made and cultural resources for wellness tourism	I16	34.6183	33.4832	68.1016	4	1.1351	Cause
	I17	34.4247	34.6265	69.0512	2	-0.2018	Effect
	I18	34.2434	34.6142	68.8577	3	-0.3708	Effect
	I19	34.4308	34.9932	69.4241	1	-0.5624	Effect
C5 Wellness service experience and activities	I20	29.8605	29.4126	59.2731	1	0.4480	Cause
	I21	27.6040	27.8369	55.4409	8	-0.2329	Effect
	I22	28.6680	29.7106	58.3786	4	-1.0425	Effect
	I23	28.5112	28.8165	57.3277	6	-0.3053	Effect
	I24	29.4897	29.5611	59.0509	2	-0.0714	Effect
	I25	29.4883	29.4160	58.9043	3	0.0723	Cause
	I26	29.4316	28.7500	58.1816	5	0.6816	Cause
	I27	28.7464	28.2961	57.0425	7	0.4502	Cause
C6 Innovative capacity of destinations	I28	26.1121	26.1094	52.2216	4	0.0027	Cause
	I29	27.3274	27.2081	54.5356	2	0.1193	Cause
	I30	27.5370	27.2081	54.7451	1	0.3289	Cause
	I31	27.3322	26.5599	53.8921	3	0.7724	Cause
	I32	25.3287	26.5521	51.8808	5	-1.2233	Effect
C7 Collaborative networking and destination branding	I33	19.3618	19.3244	38.6862	3	0.0373	Cause
	I34	18.7097	19.3157	38.0254	7	-0.6060	Effect
	I35	19.1339	19.5490	38.6829	4	-0.4151	Effect
	I36	19.0876	19.5932	38.6808	5	-0.5057	Effect
	I37	20.0987	19.0363	39.1350	1	1.0625	Cause
	I38	19.0427	18.6204	37.6632	9	0.4223	Cause
	I39	19.7788	19.1763	38.9551	2	0.6025	Cause
	I40	18.8529	19.0382	37.8911	8	-0.1853	Effect
	I41	18.8096	19.2223	38.0319	6	-0.4126	Effect

Additionally, the results of creating a cause-and-effect relationship diagram of the indicators of the 7 assessment factors are as displayed in Figures 5 to 11 and the relationships can be summarized as in Table 12.

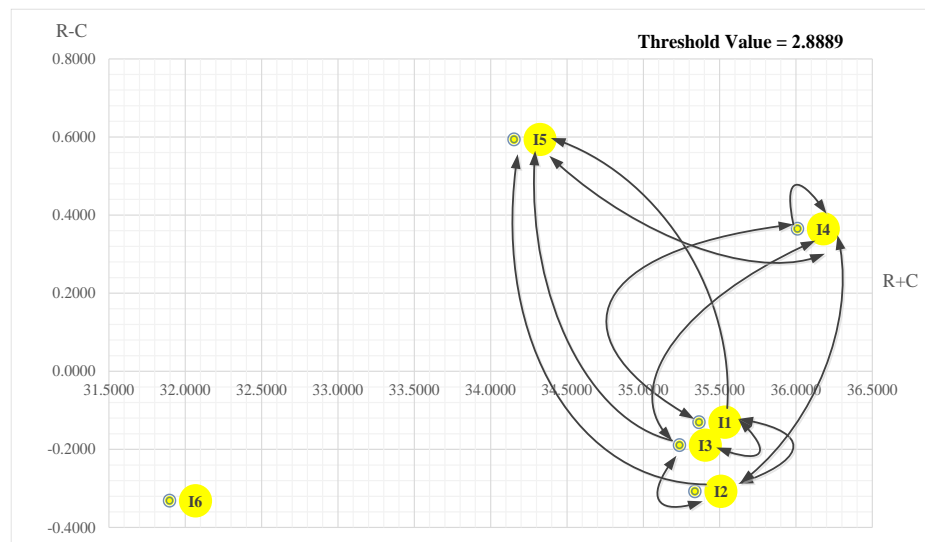


Figure 5. Cause-and-effect relationship diagram of the indicators of the destination image and hospitality assessment factor

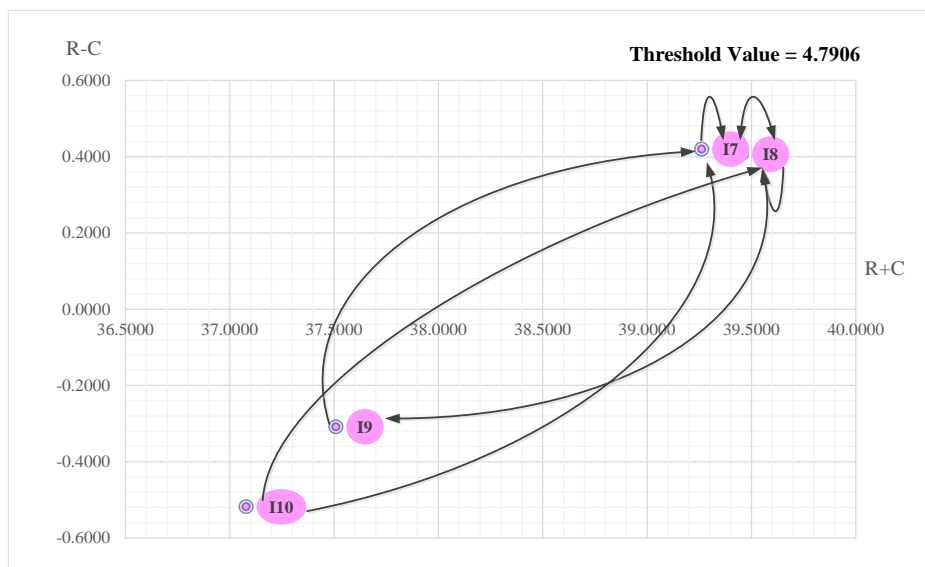


Figure 6. Cause-and-effect relationship diagram of the indicators of the destination strategy and roadmap for wellness tourism assessment factor

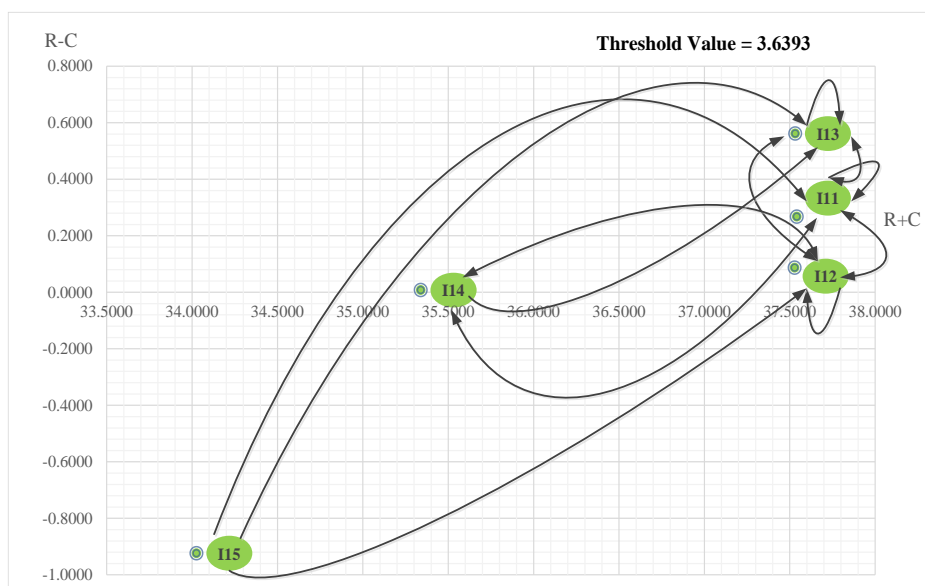


Figure 7. Cause-and-effect relationship diagram of the indicators of the infrastructure and wellness tourism carrying capacity assessment factor

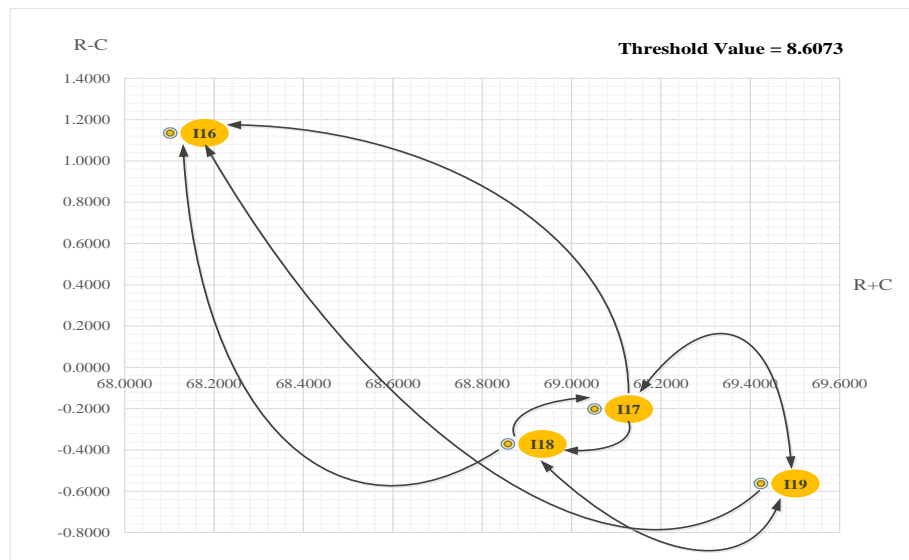


Figure 8. Cause-and-effect relationship diagram of the indicators of the man-made and cultural resources for wellness tourism assessment factor

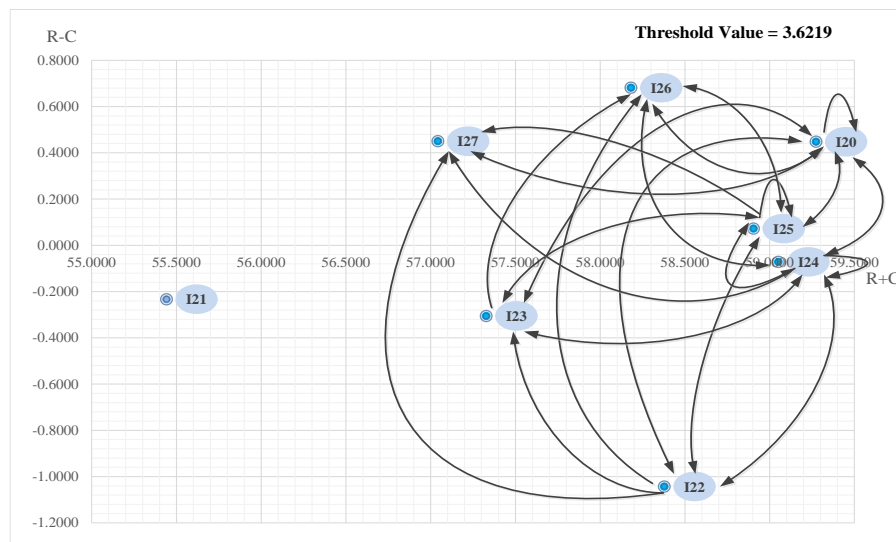


Figure 9. Cause-and-effect relationship diagram of the indicators of the wellness service experience and activities assessment factor

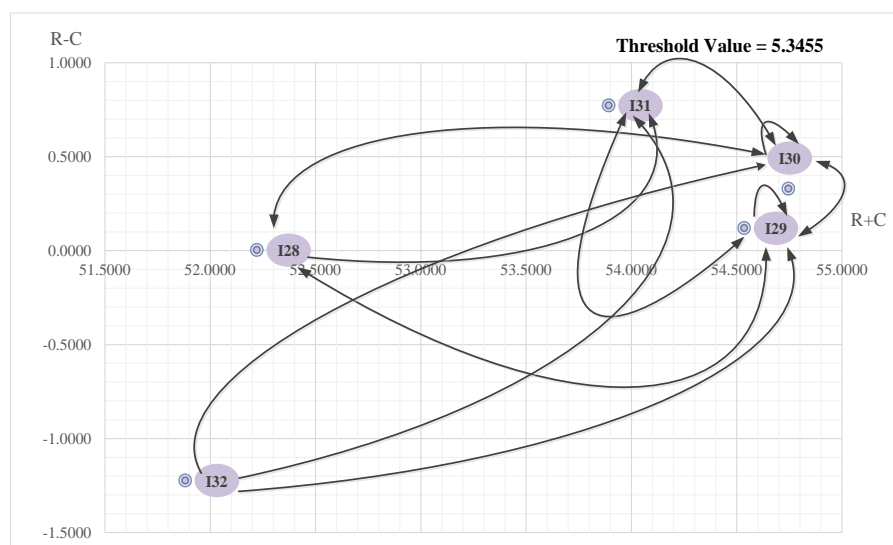


Figure 10. Cause-and-effect relationship diagram of the indicators of the innovative capacity of destinations assessment factor

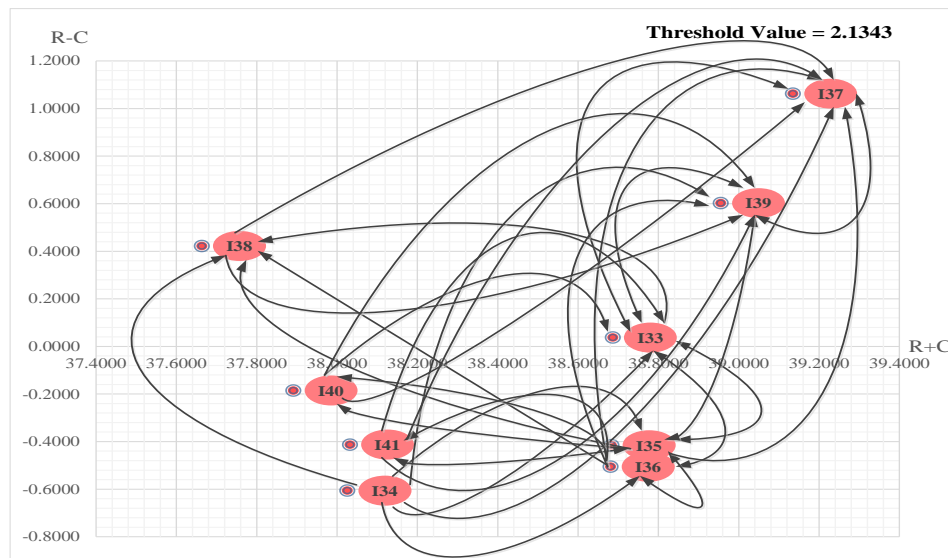


Figure 11. Cause-and-effect relationship diagram of the indicators of the collaborative networking and destination branding assessment factor

Table 12. Summary of the cause-and-effect relationships of the indicators of the 7 assessment factors

Assessment Factors	Source of effect	Relations with other indicators
C1 Destination image and hospitality	I1 Business environment that promotes wellness tourism business	I1 → I2; I1 → I3; I1 → I4; I1 → I5
	I2 Safety and security of the destination	I2 → I1; I2 → I3; I2 → I4; I2 → I5
	I3 Health and hygiene management in wellness tourism areas or destinations	I3 → I1; I3 → I2; I3 → I4; I3 → I5
	I4 Human resource readiness of personnel working in wellness tourism establishments or businesses with a responsibility of providing products and services to tourists	I4 → I1; I4 → I2; I4 → I3; I4 → I4; I4 → I5
	I5 Human resource readiness of local people with a responsibility of being good hosts to welcome wellness tourists	I5 → I4
	I6 Information technology and communication readiness	-
C2 Destination strategy and roadmap for wellness tourism	I7 Placing importance on travel, tourism, and wellness services	I7 → I7; I7 → I8
	I8 Opening up to the world specifically to promote wellness tourism	I8 → I7; I8 → I8; I8 → I9
	I9 Capacity for determining the price level of wellness products and services	I9 → I7; I9 → I8
	I10 Creating an environmentally friendly experience in destination areas	I10 → I7; I10 → I8
C3 Infrastructure and wellness tourism carrying capacity	I11 Transportation infrastructures that are ready to support wellness tourism	I11 → I11; I11 → I12; I11 → I13; I11 → I14
	I12 Infrastructures that support services and tourism	I12 → I11; I12 → I12; I12 → I13; I12 → I14
	I13 Capacity for supporting venues, accommodations, and facilities	I13 → I11; I13 → I12; I13 → I13
	I14 Capacity for catering support	I14 → I11; I14 → I12; I14 → I13
	I15 Capacity for supporting recreation and entertainment	I15 → I11; I15 → I12; I15 → I12
C4 Man-made and cultural resources for wellness tourism	I16 Natural tourist attraction readiness	-
	I17 Cultural and intellectual tourist attraction readiness	I17 → I16; I17 → I18; I17 → I19
	I18 Resources that accommodate the development of tourist attractions and routes or the establishment of new activities to meet the needs of wellness tourists	I18 → I16; I18 → I17; I18 → I19
	I19 Readiness of resources in promoting tourist health	I19 → I16; I19 → I17; I19 → I18
C5 Wellness service experience and activities	I20 Strategies to improve the quality of service and restoration	I20 → I20; I20 → I22; I20 → I23; I20 → I24; I20 → I25; I20 → I26; I20 → I27
	I21 Promoting tourist attractions' fame and certification awards	-
	I22 Planning a strategy of providing services to give a satisfying customer experience	I22 → I20; I22 → I23; I22 → I24; I22 → I25; I22 → I26; I22 → I27
	I23 Connecting various products, services, activities, and elements of wellness tourism to tourists at their destinations	I23 → I20; I23 → I24; I23 → I25; I23 → I26
	I24 Tourist attractions offer therapeutic and beauty activities	I24 → I20; I24 → I22; I24 → I23; I24 → I24; I24 → I25; I24 → I26; I24 → I27
	I25 Tourist attractions offer healthy body activities	I25 → I20; I25 → I22; I25 → I23; I25 → I24; I25 → I25; I25 → I26; I25 → I27
	I26 Tourist attractions offer healthy mind activities	I26 → I20; I26 → I24; I26 → I25
	I27 Tourist attractions offer activities to educate on the local community's way of life	I27 → I20

C6 Innovative capacity of destinations	I28 Knowledge on developing new products and services, as well as activities and elements of wellness tourism that are of high speed and high quality	I28 → I29; I28 → I30; I28 → I31
	I29 Knowledge on meeting the needs of customers or tourists as much as possible	I29 → I28; I29 → I29; I29 → I30; I29 → I31
	I30 Human capital for developing new products and services	I30 → I28; I30 → I29; I30 → I30; I30 → I31
	I31 Acceptance of service innovation	I31 → I29; I31 → I30
	I32 Creating new wellness products or services using community resources based on the distinctive local way of life and identity	I32 → I29; I32 → I30; I32 → I31
C7 Collaborative networking and destination branding	I33 Creation of cluster groups for the purpose of collaboration that can be communicated to all stakeholders	I33 → I35; I33 → I36; I33 → I37; I33 → I38; I33 → I39
	I34 Allowing or supporting the local communities to participate in planning wellness tourism	I34 → I33; I34 → I35; I34 → I36; I34 → I37; I34 → I38; I34 → I39
	I35 Collaboration between public and private agencies	I35 → I33; I35 → I36; I35 → I37; I35 → I38; I35 → I39; I35 → I40; I35 → I41
	I36 Marketing of wellness products and services jointly with allies from public and private agencies on regional, national, and international levels	I36 → I33; I36 → I35; I36 → I37; I36 → I38; I36 → I39; I36 → I40; I36 → I41
	I37 Building brands for destinations to allure tourists	I37 → I33; I37 → I39
	I38 Creating brand identity to be more memorable than the competition	I38 → I37; I38 → I39
	I39 Communicating marketing for advertising and public relations jointly with online social media on wellness	I39 → I33; I39 → I35; I39 → I37
	I40 Simulating the environment in real locations for target customers and interested individuals to experience, understand, and have a transparently clear picture of wellness tourism destinations	I40 → I33; I40 → I37; I40 → I39
	I41 Jointly building the brand values	I41 → I33; I41 → I35; I41 → I37; I41 → I39

5. Discussions

Regarding the research discussion, the researchers shall discuss the objectives of the research in their order, with details as follows:

Per the research results for objective 1) to identify and prioritize the significant competitiveness factors that need to be considered in the context of wellness tourism destinations, it was found that the significance of the competitiveness factors that need to be considered in the context of wellness tourism destinations can be prioritized in this order: 1) destination strategy and roadmap for wellness tourism (C2); 2) collaborative networking and destination branding (C7); 3) destination image and hospitality (C1); 4) infrastructure and wellness tourism carrying capacity (C3); 5) innovative capacity of destinations (C6); 6) man-made and cultural resources for wellness tourism (C4); and 7) wellness service experience and activities (C5).

This reflected that, according to the perspectives of experts from academic institutions, researchers, and experts from the tourism industry, planning and imposing policies on an area and setting up strategies that place importance on promoting wellness tourism within the area are extremely crucial processes in order to develop a tourist area or a tourist attraction's readiness into a distinctive wellness tourism destination that stands out from other areas. Imposing policies places importance on promoting wellness tourism, and planning each operation out allows stakeholders, which include cluster groups of wellness tourism businesses within an area, to acknowledge the guidelines to adapt the policies and strategies about health promotion services in a unidirectional fashion with a clear operational plan. There would be cluster groups of wellness tourism businesses within a tourist area or attraction to coordinate the collaboration to adapt the policies and strategies of that area that assist in transportation and wellness tourism practically and get results, especially regarding proactive marketing communication to groups of wellness travelers and tourists that are the target groups of such tourist areas and attractions.

However, such tourist areas and attractions must have an accommodating environment that assists wellness tourism business operations in achieving success and is capable of attracting tourists to decide to travel to such areas to use the health promotion services. This can range from having academic institutions that educate on wellness tourism, having a good public image, especially concerning tourists' safety of life and property, having measures in hygiene management and disease control, having skilled personnel with expertise in providing quality health promotion services to tourists, having locals who are friendly to tourists, and having adequate coverage of communication infrastructure within the region and surrounding areas.

Tourist areas and attractions that become wellness tourism destinations shall offer convenient travel and a connected transportation network within the area; have information centers that provide info about tourist attractions and health promotion services that are easily accessible by tourists through various channels; have a variety of lodging, catering, entertainment, and recreational activities to accommodate wellness tourism travelers and tourists in whichever way they require; as well as possess a creative capacity to learn new ideas to develop health promotion products and services to

meet the constantly changing needs of tourist behaviors. Additionally, they shall employ the various resources within the area, such as natural wealth, cultures, traditions, and local wisdoms regarding health restoration that are distinctive and unique, in order to create wellness tourism activities and routes that connect to other establishments or agencies within the cluster groups of wellness tourism businesses harmoniously. Furthermore, they shall offer health promotion service activities that are in line with each other under the stipulated strategy of providing quality services and creating memorable experiences for tourists through various activities that cover both mind and body, as well as promoting learning for wellness tourists.

By operating in accordance with the order of priority as previously mentioned, it will result in a successful, efficient, and effective development of the competitiveness capacity of tourist areas and attractions that are wellness tourism destinations. This is in line with the research by Clemes et al. [44], Dwyer [59]; Salinas Fernández et al. [31], Flores-Romero et al. [60], Mustafa et al. [61], Tleuberdinova et al. [62], Wang et al. [36], which found that any policy or strategy of an area that accommodate travel and wellness tourism, whether rules, regulations, policies on travel and tourism of a tourist area or attraction that promote wellness tourism, as well as methods to persuade wellness tourists to travel to such destinations, are considered a key driver of competitive capacity of such tourist areas or attractions that will elevate their capacity to develop the potential to create competitive advantages and support them to become distinctive and unique wellness tourism destinations. This is in conjunction with placing importance on the competitive capacity regarding the readiness of a tourist area or attraction through cluster grouping in order to jointly build strength and conduct proactive marketing to determine market positioning and create more distinctive groups of target customers, which will help attract wellness tourists and, in turn, be more likely to stimulate them into making a decision to travel to such tourist attractions or areas [41, 49-50, 56, 58-59].

Additionally, having a competitive capacity regarding the environment or significant factors within a tourist area or attraction that support the development, improvement, or process of change, as well as the attractiveness of the local area, can help promote a tourist destination to be able to attract wellness tourists to travel to such tourist attractions or areas [39, 44].

Likewise, Salinas Fernández et al. [31], Flores-Romero et al. [60], Grassini et al. [63], Kurek et al. [33], Mustafa et al. [61], Pan et al. [46], Tleuberdinova et al. [62], Wang et al. [36] pointed out that the readiness of infrastructure in tourist areas or attractions that are wellness tourism destinations which supports the development, improvement, or process of change to elevate their competitiveness capacity and be capable of growing into wellness tourism destinations that are distinctive and unique is considered a driver of competitive capacity that help promote tourist destinations' attractiveness and convince wellness tourists to decide to travel to such tourist attractions and areas easier, and Andrade and Dimanche [41], Armenski et al. [38], Bilbao-Terol et al. [30], Dwyer [59], Flores-Romero et al. [60], Indrajaya et al. [64], Mustafa et al. [61], Reisinger et al. [35] showed that the readiness of a tourist area or attraction to support the development and improvement of its capacity to create and introduce new health promotion products or services and promote a tourist destination's capacity to attract wellness tourists to decide to travel to such tourist areas and attractions. Is also another driver of competitive capacity of such tourist areas and attractions, which helps to promote the development and improvement of tourist destinations to be distinctive and unique in a unidirectional manner.

Añaña et al. [37], Dwyer [59], Fernández et al. [31], Flores-Romero et al. [60], Grassini et al. [63], Hanafiah and Zulkifly [42], Masih et al. [47], Mustafa et al. [61], Pan et al. [46], Portolan [34], Reisinger et al. [35], Tleuberdinova et al. [62], Wang et al. [36] found that the readiness of semi-natural resources, man-made resources, and cultures and local wisdoms in tourist areas or attractions to support the development of tourist attractions and routes or create new activities to meet the needs of wellness tourists, as well as the attractiveness of the local areas, is also a driver of competitive capacity that helps promote a tourist destination's capacity to attract wellness tourists to decide to travel to such tourist areas and attractions. Finally, Bilbao-Terol et al. [30], Clemes et al. [44], Dwyer [59], Flores-Romero et al. [60], Medical Tourism Association [49], Mustafa et al. [61], Reisinger et al. [35], Težak Damijanić [2], Tleuberdinova et al. [62] found that planning strategies to develop and improve the wellness tourism services of tourist areas or attractions through introducing restorative activities for comprehensive health promotion, including body, mind, emotion, work, intellect, and spiritual, is also considered a driver of competitive capacity, which helps to promote tourist destinations' attractiveness and convince wellness tourists to decide to travel to such tourist attractions and areas.

Per the research results for objective 2) to identify the causal interrelationships between competitiveness factors that need to be considered in the context of wellness tourism destinations, organized into "cause" factors and "effect" factors as follows: 1) "cause" factors, which include wellness service experience and activities (C5), destination image and hospitality (C1), destination strategy and roadmap for wellness tourism (C2), and infrastructure and wellness tourism carrying capacity (C3); and 2) "effect" factors, which include collaborative networking and destination branding (C7), innovative capacity of destinations (C6), and man-made and cultural resources for wellness tourism (C4).

The wellness service experience and activities (C5) factor is the most significant cause factor out of all competitiveness assessment factors that need to be considered in the context of wellness tourism destinations, with the strategies to improve the quality of service and restoration (I20) being the most significant source of effect indicator in

this factor. This reflects that, from the perspective of experts from academic institutions and researchers and of experts from the tourism industry, tourist areas or attractions can develop their capacity to become wellness tourism destinations that are distinctive and unique if the stakeholders in such tourist areas or attractions place importance on planning strategies to improve the quality of service and restoration of those working within such tourist areas and attractions. This includes: 1) building a unique identity by implementing local elements such as food, clothing, local dialects, and traditions, with the offered services such as traditional massage, herbal steam baths, and other services that display the local Thai way-of-life; 2) taking advantage of natural forces as part of health promotion and therapy services, such as weather, mineral water, natural hot springs, and sand and mud baths, as well as decorating the facilities with natural materials; 3) creating appealing aesthetics in services to provide relaxation for the body, mind, and spirit of tourists, such as decorations, facilities, traditional local clothing, ambient music, therapeutic natural fragrances, etc. 4) providing health therapy services using conventional wisdom methods, such as creating a balanced health of body and mind with Ayurveda alternative medicine, eating herbal food dishes, cooking naturally, etc. 5) taking into account the tranquility and stability of the local communities and the environment, such as preserving local traditions, respecting the elderly, etc. and 6) taking into account the actual benefits and qualities of the provided services, such as building customer confidence, credibility, attentiveness in health promotion and restoration, service safety, etc.

The aforementioned guidelines are all sub-indicators that drive the strategies to improve the quality of service and restoration, which are conditions for the most significant indicator of the competitiveness assessment factor regarding health promotion service strategies and models that promote the development and improvement of tourist areas or attractions' competitiveness so they have the readiness and the capacity to become wellness tourism destinations that are distinctive and unique in accordance with the research of Dwyer [59], Flores-Romero et al. [60], Mustafa et al. [61], Roy et al. [43], and Tleuberdinova et al. [62]. It is found that the quality of service and restoration is a significant indicator of the competitiveness assessment factor regarding health promotion service strategies and models.

The second most significant cause factor is destination image and hospitality (C1), with the human resource readiness of personnel working in wellness tourism establishments or businesses with a responsibility of providing products and services to tourists (I4) as the most significant source of effect indicator in this factor. This reflects that from the perspective of experts from academic institutions and researchers and of experts from the tourism industry, tourist areas or attractions can develop their capacity to become wellness tourism destinations that are distinctive and unique if the stakeholders in such tourist areas or attractions place importance on improving the quality, experience, and acknowledgement of personnel working in wellness tourism establishments or businesses with a responsibility of providing products and services to tourists, especially through conducting feedback evaluation of the provision of products and services satisfaction score from the tourists' perspectives.

The aforementioned guidelines are all sub-indicators that drive the human resource readiness of personnel working in wellness tourism establishments or businesses with a responsibility of providing products and services to tourists, which are conditions for the most significant indicator of the competitiveness assessment factor regarding the environment of tourist destinations that promotes the development and improvement of tourist areas or attractions' competitiveness so they have the readiness and the capacity to become wellness tourism destinations that are distinctive and unique efficiently, effectively, and in accordance with the research of Dwyer [59], Fernández et al. [31], Grassini et al. [63], Mustafa et al. [61], Wang et al. [36]. It is found that the human resources in such tourist areas or attractions, especially personnel working in wellness tourism establishments or businesses who are experienced in their line of work and can deliver an impressive health promotion service experience for tourists, are a significant indicator of the competitiveness assessment factor regarding the environment that promotes wellness tourism in the destinations.

The third most significant cause factor is destination strategy and roadmap for wellness tourism (C2), with opening up to the world specifically to promote wellness tourism (I8) as the most significant source of effect indicator in this factor. This reflects that, from the perspective of experts from academic institutions and researchers and of experts from the tourism industry, tourist areas or attractions can develop their capacity to become wellness tourism destinations that are distinctive and unique if the stakeholders in such tourist areas or attractions place importance on the completeness of guidelines and policies in opening up to the world specifically to promote wellness tourism in cities/tourist areas/tourist attractions and surrounding areas. This includes 1) accommodating the visa application process and visa exemption for leisure purposes; 2) providing financial institutions and accommodating the currency exchange process; 3) having tax incentive policies for wellness tourism services; 4) readiness of payment for products and services that support foreign currencies that meet international standards; 5) service providers and those involved with wellness tourism are capable of communicating in foreign languages with tourists; and 6) presenting news to publicize wellness tourism through online channels in foreign languages that meet international standards.

The aforementioned guidelines are all sub-indicators that drive the policies of opening up to the world to specifically promote wellness tourism, which are conditions for the most significant indicator of the competitiveness assessment factor regarding the environment of tourist destinations that promotes the development and improvement of tourist areas or attractions' competitiveness so they have the readiness and the capacity to become wellness tourism destinations that

are distinctive and unique and in accordance with the research of Añaña et al. [37], Fernández et al. [31], Hanafiah and Zulkifly [42], Mustafa et al. [61], Portolan [34], Reisinger et al. [35], Tleuberdinova et al. [62]. It was found that the policies promoting wellness tourism that open up the world of tourist areas or attractions are a significant indicator of the competitiveness assessment factor regarding the policies of tourist areas and strategies that accommodate travel and wellness tourism.

Lastly, the fourth most significant cause factor is infrastructure and wellness tourism carrying capacity (C3), with the transportation infrastructures that are ready to support wellness tourism (I11) as the most significant source of effect indicator in this factor. This reflects that, from the perspective of experts from academic institutions and researchers and of experts from the tourism industry, tourist areas or attractions can develop their capacity to become wellness tourism destinations that are distinctive and unique if the stakeholders in such tourist areas or attractions place importance on accommodating the ease of travel into tourist areas or destinations of tourists from other locations. This includes: 1) having airports that provide both domestic and international commercial flights to tourist areas/attractions or nearby cities that are located within 150 kilometers of tourist areas or attractions; 2) having roads that are primary national highways (single-digit highways) leading to tourist areas or attractions; 3) having roads that are primary regional national highways (two-digit highways) leading to tourist areas or attractions; and 4) having public taxi services and public transportation systems within tourist areas/attractions.

The aforementioned guidelines are all sub-indicators that drive the transportation infrastructure that is ready to support wellness tourism, which are conditions for the most significant indicator of the competitiveness assessment factor regarding the environment of tourist destinations that promotes the development and improvement of tourist areas or attractions' competitiveness so they have the readiness and the capacity to become wellness tourism destinations that are distinctive and unique and in accordance with the research of Dundar Ege and Demir Uslu [40], Fernández et al. [31], Flores-Romero et al. [60], Gajić et al. [32], Grassini et al. [63], Hanafiah and Zulkifly [42], Pan et al. [46], Portolan [34], Reisinger et al. [35], Roy et al. [43], Wang et al. [36]. It is found that the transportation infrastructure within tourist areas or attractions that is comfortable, interconnected, and has a reasonable travel time is a significant indicator of the competitiveness assessment factor regarding the infrastructure and capacity to support wellness tourism.

6. Conclusions

The result of this research is used to answer the research questions: 1) what are the significant competitiveness assessment factors that need to be considered in the context of wellness tourism destinations? It is also used to satisfy the research objective 1) of identifying and prioritizing the significant competitiveness factors that need to be considered in the context of wellness tourism destinations. In these regards, it can be summarized that the competitiveness factors that need to be considered in the context of wellness tourism destinations can be prioritized in this order: 1) destination strategy and roadmap for wellness tourism (C2); 2) collaborative networking and destination branding (C7); 3) destination image and hospitality (C1); 4) infrastructure and wellness tourism carrying capacity; (C3) 5) innovative capacity of destinations (C6); 6) man-made and cultural resources for wellness tourism (C4); and 7) wellness service experience and activities (C5). The result of this research is also used to answer the research question 2) what is the cause-and-effect of competitiveness assessment factors that need to be considered in the context of wellness tourism destinations? It is also used to satisfy research objective 2) to identify the causal interrelationships between competitiveness factors that need to be considered in the context of wellness tourism destinations. In these regards, the competitiveness assessment factors that need to be considered in the context of wellness tourism destinations can be organized into "cause" factors and "effect" factors. The "cause" factors consist of 1) wellness service experience and activities (C5); 2) destination image and hospitality (C1); 3) destination strategy and roadmap for wellness tourism (C2); and 4) infrastructure and wellness tourism carrying capacity (C3). On the other hand, the "effect" factors consist of 1) collaborative networking and destination branding (C7), 2) innovative capacity of destinations (C6), and 3) man-made and cultural resources for wellness tourism (C4).

Theoretically, the results of this research provide an insight into the competitiveness assessment factors and indicators in the context of wellness tourism destinations, as well as factors and indicators that need to be considered in improving the competitiveness of wellness tourism destinations to attract wellness tourists looking for preventive health care or health promotion services at tourist destinations. These destinations have the readiness of tourist areas or attractions that support the development, improvement, or process of change, as well as the attractiveness of the local communities to compete on an international level in all areas, ranging from destination image and hospitality, destination strategy and roadmap for wellness tourism, infrastructure and wellness tourism carrying capacity, man-made and cultural resources for wellness tourism, wellness service experience and activities, innovative capacity of destinations, and collaborative networking and destination branding.

Practically, for future studies, researchers may employ the generated assessment factors and indicators as well as the weighted averages of assessment factors and indicators received from the research using the DEMATEL method to be developed as criteria, determine the cut scores of the assessment, and classify the criteria into different groups depending

on their level of competitiveness as wellness tourism destinations. This is in order to develop an innovative model and a decision support system to assess the competitiveness of wellness tourism destinations, which is an administrative tool and a comparison tool to determine strategies to improve the competitiveness of wellness tourism destinations in correlation with the priorities of assessment factors and indicators. This shall create sustainable competitive advantages for entrepreneurs, public and private agencies, as well as stakeholders who are involved in the lucrative tourism industry and wellness tourism business in Thailand in the future.

7. Declarations

7.1. Author Contributions

Conceptualization, T.P.; methodology, T.P.; formal analysis, T.P.; investigation, T.P.; data curation, T.P.; writing—original draft preparation, T.P.; writing—review and editing, T.P.; visualization, T.P.; supervision, P.A., A.C., and K.P. All authors have read and agreed to the published version of the manuscript.

7.2. Data Availability Statement

The data presented in this study are available in the article.

7.3. Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

7.4. Institutional Review Board Statement

The study was conducted in accordance with the Declaration of Helsinki and approved by Research Ethics Review Committee for Research Involving Human Subjects: The Second Allied Academic Group in Social Sciences, Humanities, and Fine and Applied Arts at Chulalongkorn University (COA No. 019/2565 and approved on February 14, 2022).

7.5. Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

7.6. Declaration of Competing Interest

The authors declare that there is no conflict of interests regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies have been completely observed by the authors.

8. References

- [1] Mueller, H., & Kaufmann, E. L. (2001). Wellness tourism: Market analysis of a special health tourism segment and implications for the hotel industry. *Journal of Vacation Marketing*, 7(1), 5–17. doi:10.1177/135676670100700101.
- [2] Težak Damijanić, A. (2019). Wellness and healthy lifestyle in tourism settings. *Tourism Review*, 74(4), 978–989. doi:10.1108/TR-02-2019-0046.
- [3] Chen, K.-H., Chang, F.-H., & Wu (Kenny), C. (2013). Investigating the wellness tourism factors in hot spring hotel customer service. *International Journal of Contemporary Hospitality Management*, 25(7), 1092–1114. doi:10.1108/ijchm-06-2012-0086.
- [4] Wang, K., Xu, H., & Huang, L. (2020). Wellness tourism and spatial stigma: A case study of Bama, China. *Tourism Management*, 78, 104039. doi:10.1016/j.tourman.2019.104039.
- [5] World Tourism Organization (UNWTO). (2018). *Exploring Health Tourism – Executive Summary*. World Tourism Organization (UNWTO), Madrid, Spain. doi:10.18111/9789284420308.
- [6] GHS Index. (2021). *GHS Index Country Profile for Thailand*. Global Health Security (GHS) Index 2021, Washington, United States. Available online: <https://www.ghsindex.org/country/thailand/> (accessed on March 2023).
- [7] GWI. (2022). *The Global Wellness Economy: Country Rankings 2022*. Global Wellness Institute, Miami, United States. Available online: <https://globalwellnessinstitute.org/industry-research/2022-global-wellness-economy-country-rankings/#:~:text=The%20Top%2020%20Wellness%20Markets,spend%20the%20most%20on%20wellness> (accessed on March 2023).
- [8] Department of Health Service Support, Ministry of Public. (2017). *Thailand Development Strategy as an international wellness center (MEDICAL HUB) (2017 - 2026)*. https://ict.moph.go.th/upload_file/files/eHealth_Strategy_ENG_141117.pdf (accessed on January 2023).

- [9] Salehi, R., Ali Asaadi, M., Haji Rahimi, M., & Mehrabi, A. (2021). The information technology barriers in supply chain of sugarcane in Khuzestan province, Iran: A combined ANP-DEMATEL approach. *Information Processing in Agriculture*, 8(3), 458–468. doi:10.1016/j.inpa.2020.09.005.
- [10] Jabla, R., Khemaja, M., & Faiz, S. (2022). Decision-making improvement in dynamic environments using machine learning. *Journal of Human, Earth, and Future*, 3(1), 55–68. doi:10.28991/HEF-2022-03-01-04.
- [11] Liou, J. J. H., Tzeng, G. H., & Chang, H. C. (2007). Airline safety measurement using a hybrid model. *Journal of Air Transport Management*, 13(4), 243–249. doi:10.1016/j.jairtraman.2007.04.008.
- [12] Tzeng, G. H., Chiang, C. H., & Li, C. W. (2007). Evaluating intertwined effects in e-learning programs: A novel hybrid MCDM model based on factor analysis and DEMATEL. *Expert Systems with Applications*, 32(4), 1028–1044. doi:10.1016/j.eswa.2006.02.004.
- [13] Kambu, Z., Jinca, M. Y., Pallu, M. S., & Ramli, M. I. (2022). Meta synthesis of community participation model on Trans-Papua road development. *Civil Engineering Journal*, 8(11), 2476–2489. doi:10.28991/CEJ-2022-08-11-08.
- [14] Hapsari, I. C., Anandya, R., Hidayanto, A. N., Budi, N. F. A., & Phusavat, K. (2022). Prioritizing Barriers and Strategies Mapping in Business Intelligence Projects Using Fuzzy AHP TOPSIS Framework in Developing Country. *Emerging Science Journal*, 6(2), 337–355. doi:10.28991/ESJ-2022-06-02-010.
- [15] Tzeng, G.-H., & Huang, J.-J. (2011). *Multiple Attribute Decision Making*. Chapman and Hall/CRC, New York, United States. doi:10.1201/b11032.
- [16] Esfandiari, K., Rahmani Seryasat, M., & Kozak, M. (2023). To shop or not to shop while traveling? Exploring the influence of shopping mall attributes on overall tourist shopping satisfaction. *Tourism Recreation Research*, 1–16. doi:10.1080/02508281.2023.2186088.
- [17] Chu-Hua, L., Sun-Weng, H., Mei-Ting, H., Chiao-Bing, L., & Gwo-Hshiung, T. (2023). Improving the Poverty-Alleviating Effects of Bed and Breakfast Tourism Using Z-DEMATEL. *International Journal of Fuzzy Systems*, 25(5), 1907–1921. doi:10.1007/s40815-023-01481-6.
- [18] Asadi, H., Soffianian, A., Hemami, M. R., Fakheran, S., Akbari Feizabadi, H., & Corcoran, F. (2022). A hybrid GIS-OWA and DANP method for the identification and evaluation of ecotourism attractions: the case study of Abbas Abad Wildlife Refuge, Iran. *GeoJournal*, 87(6), 5179–5196. doi:10.1007/s10708-021-10564-6.
- [19] Oralhan, B., Oralhan, Z., & Kirdök, N. (2022). Evaluation of Ski Centers' Performance Using Multiple-Criteria Decision-Making Methods. *Polish Journal of Sport and Tourism*, 29(3), 29–35. doi:10.2478/pjst-2022-0018.
- [20] Huang, W., Chen, C. Y., & Fu, Y. K. (2022). The Sustainable Island Tourism Evaluation Model Using the FDM-DEMATEL-ANP Method. *Sustainability (Switzerland)*, 14(12), 7244. doi:10.3390/su14127244.
- [21] Gómez, S. D. Á., Fernández, A. J. R., & Bravo, M. R. R. (2022). Application of Neutrosophy in the Study of the Factors that Influence Ecuadorian Tourism Development. *Neutrosophic Sets and Systems*, 52(1), 389–399. doi:10.5281/zenodo.7374440.
- [22] Fathi, M. R., Torabi, M., & Razi Moheb Saraj, S. (2022). The future of apitourism in Iran based on critical uncertainty approach and DEMATEL/COPRAS techniques. *Journal of Tourism Futures*. doi:10.1108/JTF-09-2021-0215.
- [23] Kaymaz, Ç. K., Çakır, Ç., Birinci, S., & Kızıllan, Y. (2021). GIS-Fuzzy DEMATEL MCDA model in the evaluation of the areas for ecotourism development: A case study of “Uzundere”, Erzurum-Turkey. *Applied Geography*, 136, 102577. doi:10.1016/j.apgeog.2021.102577.
- [24] Hosseini, A., Pourahmad, A., Ayashi, A., Tzeng, G. H., Banaitis, A., & Pourahmad, A. (2021). Improving the urban heritage based on a tourism risk assessment using a hybrid fuzzy MADM method: The case study of Tehran's central district. *Journal of Multi-Criteria Decision Analysis*, 28(5–6), 248–268. doi:10.1002/mcda.1746.
- [25] Zhou, W., Chen, L. Y., & Chou, R. J. (2021). Important factors affecting rural tourists' aesthetic experience: a case study of Zoumatang village in Ningbo. *Sustainability (Switzerland)*, 13(14), 7594. doi:10.3390/su13147594.
- [26] Chang, D. S., & Wu, W. De. (2021). Impact of the COVID-19 pandemic on the tourism industry: Applying TRIZ and DEMATEL to construct a decision-making model. *Sustainability (Switzerland)*, 13(14), 7610. doi:10.3390/su13147610.
- [27] Lo, H. W., & Liou, J. J. H. (2021). Comments on “Factors influencing medical tourism adoption in Malaysia: A DEMATEL-Fuzzy TOPSIS approach.” *Computers & Industrial Engineering*, 157, 107333. doi:10.1016/j.cie.2021.107333.
- [28] Altuntas, F., & Gok, M. S. (2021). The effect of COVID-19 pandemic on domestic tourism: A DEMATEL method analysis on quarantine decisions. *International Journal of Hospitality Management*, 92, 102719. doi:10.1016/j.ijhm.2020.102719.
- [29] Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Journal of Clinical Epidemiology*, 62(10), 1006–1012. doi:10.1016/j.jclinepi.2009.06.005.

- [30] Bilbao-Terol, A., Arenas-Parra, M., & Onopko-Onopko, V. (2019). Measuring regional sustainable competitiveness: a multi-criteria approach. *Operational Research*, 19(3), 637–660. doi:10.1007/s12351-017-0367-9.
- [31] Salinas Fernández, J. A., Serdeira Azevedo, P., Martín Martín, J. M., & Rodríguez Martín, J. A. (2020). Determinants of tourism destination competitiveness in the countries most visited by international tourists: Proposal of a synthetic index. *Tourism Management Perspectives*, 33, 100582. doi:10.1016/j.tmp.2019.100582.
- [32] Gajić, T., Penić, M., Vujko, A., & Petrović, M. D. (2018). Development Perspectives of Rural Tourism Policy - A Comparative Study of Rural Tourism Competitiveness Based on Perceptions of Tourism Workers in Slovenia and Serbia. *Eastern European Countryside*, 24(1), 143–154. doi:10.2478/eec-2018-0007.
- [33] Kurek, K. A., Heijman, W., van Ophem, J., Gędek, S., & Strojny, J. (2020). The impact of geothermal resources on the competitiveness of municipalities: evidence from Poland. *Renewable Energy*, 151, 1230–1239. doi:10.1016/j.renene.2019.11.126.
- [34] Portolan, A. (2019). the Competitiveness of the Republic of Croatia on the European Union Tourism Market. *Tourism in Southern and East Europe*, 5, 581–595. doi:10.20867/tosee.05.15.
- [35] Reisinger, Y., Michael, N., & Hayes, J. P. (2019). Destination competitiveness from a tourist perspective: A case of the United Arab Emirates. *International Journal of Tourism Research*, 21(2), 259–279. doi:10.1002/jtr.2259.
- [36] Wang, J., Huang, X., Gong, Z., & Cao, K. (2020). Dynamic assessment of tourism carrying capacity and its impacts on tourism economic growth in urban tourism destinations in China. *Journal of Destination Marketing & Management*, 15, 100383. doi:10.1016/j.jdmm.2019.100383.
- [37] Añaña, E. da S., Rodrigues, R. C., & Flores, L. C. da S. (2018). Competitive performance as a substitute for competitiveness measurement in tourism destinations: an integrative study. *International Journal of Tourism Cities*, 4(2), 207–219. doi:10.1108/IJTC-07-2017-0035.
- [38] Armenski, T., Dwyer, L., & Pavluković, V. (2018). Destination Competitiveness: Public and Private Sector Tourism Management in Serbia. *Journal of Travel Research*, 57(3), 384–398. doi:10.1177/0047287517692445.
- [39] Garau, C., & Pavan, V. M. (2018). Evaluating urban quality: Indicators and assessment tools for smart sustainable cities. *Sustainability (Switzerland)*, 10(3), 575. doi:10.3390/su10030575.
- [40] Dundar Ege, S., & Demir Uslu, Y. (2018). An Assessment of Competitive Factors in Medical Tourism. *International Journal of Research in Business and Social Science* (2147- 4478), 7(2), 14–21. doi:10.20525/ijrbs.v7i2.876.
- [41] Andrades, L., & Dimanche, F. (2019). Destination competitiveness in Russia: tourism professionals' skills and competences. *International Journal of Contemporary Hospitality Management*, 31(2), 910–930. doi:10.1108/IJCHM-11-2017-0769.
- [42] Hanafiah, M. H., & Zulkifly, M. I. (2019). Tourism destination competitiveness and tourism performance. *Competitiveness Review: An International Business Journal*, 29(5), 592–621. doi:10.1108/cr-07-2018-0045.
- [43] Roy, J., Chatterjee, K., Bandyopadhyay, A., & Kar, S. (2018). Evaluation and selection of medical tourism sites: A rough analytic hierarchy process based multi-attributive border approximation area comparison approach. *Expert Systems*, 35(1), 12232. doi:10.1111/exsy.12232.
- [44] Clemes, M. D., Dean, D. L., & Thitiya, T. (2020). Modelling the behavioural intentions of day spa customers. *Asia Pacific Journal of Marketing and Logistics*, 32(8), 1699–1716. doi:10.1108/APJML-04-2019-0258.
- [45] Özen, N., & Varolgüneş, F. K. (2018). Assessment of Thermal Tourism Facilities (TTFS) from the Perspective of Ecological Architecture-The Case of Eastern of Turkey. *Online Journal of Art and Design*, 6(5), 360-380.
- [46] Pan, X., Yang, Z., Han, F., Lu, Y., & Liu, Q. (2019). Evaluating potential areas for mountain wellness tourism: A case study of Ili, Xinjiang province. *Sustainability (Switzerland)*, 11(20), 5668. doi:10.3390/su11205668.
- [47] Masih, M., Jozi, S. A., Lahijanian, A. A. M., Danehkar, A., & Vafaeinejad, A. (2018). Capability assessment and tourism development model verification of Haraz watershed using analytical hierarchy process (AHP). *Environmental Monitoring and Assessment*, 190(8), 468. doi:10.1007/s10661-018-6823-z.
- [48] Lo, M. C., Chin, C. H., & Law, F. Y. (2019). Tourists' perspectives on hard and soft services toward rural tourism destination competitiveness: Community support as a moderator. *Tourism and Hospitality Research*, 19(2), 139–157. doi:10.1177/1467358417715677.
- [49] Medical Tourism Association. (2020). Medical tourism index 2020-2021. Medical Tourism Association, Palm Beach Gardens, United States. Available online: <https://www.medicaltourism.com/mti/home> (accessed on March 2023).
- [50] Indrawan, G., Setiawan, H., & Gunadi, A. (2022). Multi-class SVM Classification Comparison for Health Service Satisfaction Survey Data in Bahasa. *HighTech and Innovation Journal*, 3(4), 425-442. doi:10.28991/HIJ-2022-03-04-05.

- [51] Michopoulou, E., Al-Qasbi, I., & Melpignano, C. (2021). Co-creating Value in Desert Tourism Experiences. *Tourism Planning and Development*, 18(2), 245–265. doi:10.1080/21568316.2021.1873835.
- [52] Glaser, B. G., & Strauss, A. L. (2017). *The Discovery of Grounded Theory*. Routledge, New York, United States. doi:10.4324/9780203793206.
- [53] Rovinelli, R.J. and Hambleton, R.K. (1977) On the Use of Content Specialists in the Assessment of Criterion-Referenced Test Item Validity. *Tijdschrift Voor Onderwijs Research*, 2, 49-60.
- [54] Nunnally, J. C. (1978). *Psychometric Theory: 2d Ed*. McGraw-Hill, New York, United States.
- [55] Hair, J., Black, W., Babin, B., & Anderson, R. (2010). *Multivariate Data Analysis (7th Ed.)*. Prentice-Hall, United States.
- [56] Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, 107(2), 238–246. doi:10.1037/0033-2909.107.2.238.
- [57] Lin, C. J., & Wu, W. W. (2008). A causal analytical method for group decision-making under fuzzy environment. *Expert Systems with Applications*, 34(1), 205–213. doi:10.1016/j.eswa.2006.08.012.
- [58] Yang, Y., Shieh, H., Leu, J., & Tzeng, G.-H. (2008). A novel hybrid MCDM model combined with DEMATEL and ANP with applications. *International Journal of Operations Research*, 5(3), 160–168.
- [59] Dwyer, L. (2022). Destination competitiveness and resident well-being. *Tourism Management Perspectives*, 43, 100996. doi:10.1016/j.tmp.2022.100996.
- [60] Flores-Romero, M. B., Pérez-Romero, M. E., Álvarez-García, J., & del Río-Rama, M. de la C. (2021). Fuzzy Techniques Applied to the Analysis of the Causes and Effects of Tourism Competitiveness. *Mathematics*, 9(7), 777. doi:10.3390/math9070777.
- [61] Mustafa, H., Omar, B., Mukhiar, S. N. S., Park, O., & Zainol, W. W. (2021). Exploring Island Destination Competitiveness of Langkawi and Jeju UNESCO Global Geopark: Assessment from International Tourists and Tourism Practitioners. *Tourism Planning & Development*, 20(6), 1054–1081. doi:10.1080/21568316.2021.1979637.
- [62] Tleuberdinova, A., Salauatova, D., & Pratt, S. (2022). Assessing tourism destination competitiveness: the case of Kazakhstan. *Journal of Policy Research in Tourism, Leisure and Events*, 1–19. doi:10.1080/19407963.2022.2027954.
- [63] Grassini, L., Magrini, A., & Conti, E. (2023). Formative-reflective scheme for the assessment of tourism destination competitiveness: an analysis of Italian municipalities. *Quality and Quantity*, 57(4), 3523–3548. doi:10.1007/s11135-022-01519-1.

Appendix I

Sample of a Research Questionnaire for Experts On the Topic of the Development of Wellness Tourism Destination Competitiveness Assessment

Dear Esteemed Expert/Volunteer/Research Participant

This questionnaire is part of a research on the topic of “The Development of Wellness Tourism Destination Competitiveness Assessment”, with the purpose of studying the assessment factors and indicators of wellness tourism destinations in order to develop an innovative assessment system and to develop a quality test of the innovative wellness tourism destination competitiveness assessment system that is to be used in assessing the competitiveness of wellness tourism destinations.

To that end, the research team hereby requests your help in answering the questionnaire truthfully as an expert. You have a right to accept or decline sharing data without losing any benefit or receiving any effect. Participation of this research project is voluntary and is not forced, and you have a right to decline participating in the research by ticking in the “Not willing to participate in the research questionnaire” box. If you are willing to participate in this research and have acknowledged the protection of rights guidelines, you can tick a mark in the “Willing to participate in the research questionnaire” and proceed to the next part of the questionnaire. Additionally, if the expert feels uncomfortable to share further data, it is within your power to terminate the process at any time. The research team wishes to inform the informant that any data gathered from this questionnaire shall remain confidential and that only the research team members shall have access to the data, which will be discarded once the research is completed. The report of research results shall be conducted with a holistic approach and shall be proceeded with care and concise without mentioning the name of the informant or any personal data on any document related to this research before receiving a permission from the informant. This research is conducted solely for academic purposes. The research team would kindly thank you for taking the time to answer this questionnaire, which is a crucial element in contributing to the success of this research.

Research Team

Research Questionnaire Instructions

This questionnaire is used to study the topic of wellness tourism destination competitiveness assessment, which is separated into 3 parts as follows:

Part 1 is about the data on the current status of the expert taking the questionnaire.

Part 2 is about questions asking about your thoughts on the priorities of wellness tourism destination competitiveness assessment factors.

Part 3 is about questions asking about your thoughts on the priorities of condition indicators in each factor of wellness tourism destination competitiveness assessment.

Part 1 Data on the Current Status of the Expert

Instructions

Please insert a tick mark into a box ☐ that best described your current status or write down your answer that best described your current status in the spaces provided.

1. As an expert, which field of expertise are you currently working in?

☐ **Experts from an academic institution/professional association/institute**, such as universities, skill development institutes, Thailand Professional Qualification Institute, Thailand Nursing and Midwifery Council, Medical Council of Thailand, and Dental Council of Thailand.

☐ **Experts from the public sector**, such as Department of Health Service Support, Ministry of Public Health, Ministry of Tourism and Sports, and Tourism Authority of Thailand.

☐ **Experts from associations/supporting agencies**, such as Thai Spa Association, Association of Thai Travel Agents, Federation of Thai Spa & Wellness Association, Tourism Council of Thailand, provincial spa associations, provincial tourism associations, Union of Thai Traditional Medicine Society, Thai Hotels Association, regional associations, provincial tourism businesses, and provincial digital economy promotion agencies.

☐ **Experts from all-inclusive tourism businesses**, such as lodging, food and beverage providers, tourism agencies, rental car services, insurance companies, souvenir shops, airlines, online media, and local tourism agencies.

☐ **Experts from wellness services**, such as private hospitals, dental clinics, aesthetic clinics, spa resorts, day spas, massage parlours, fitness and sports centres, yoga, meditation and mental relaxation, and medical nutrition therapies.

2. What is your current profession?

3. How long is your work experience in the field of wellness tourism? (Please provide the answer in years)

Part 2 Questions regarding your thoughts on the priorities of wellness tourism destination competitiveness assessment factors

Instructions

Please specify the priority of the influence between the following factor pairs according to your opinions, with the scoring criteria for the questionnaire as follows:

Priority level 0 is a level of no influence

Priority level 1 is a level of very low influence

Priority level 2 is a level of low influence

Priority level 3 is a level of high influence

Priority level 4 is a level of very high influence

Example

Factor Pairs Used in Comparing Levels of Mutual Influence	What do you think is the priority level or the mutual influence level of these factor pairs?				
	4 Very High	3 High	2 Low	1 Very Low	0 None
Destination image and hospitality (C1) and Destination strategy and roadmap for wellness tourism (C2)	/				

***Based on the above example of comparing levels of mutual influence of factor pairs, it is showed that:**

“Destination image and hospitality (C1)” **has a high level** of priority or influence to “Destination strategy and roadmap for wellness tourism (C2)”

Factor Pairs Used in Comparing Levels of Mutual Influence	What do you think is the priority level or the mutual influence level of these factor pairs?				
	4 Very High	3 High	2 Low	1 Very Low	0 None
1. Destination image and hospitality (C1) and Destination strategy and roadmap for wellness tourism (C2)					
2. Destination image and hospitality (C1) and Infrastructure and wellness tourism carrying capacity (C3)					
3. Destination image and hospitality (C1) and Man-made and cultural resources for wellness tourism (C4)					
4. Destination image and hospitality (C1) and Wellness service experience and activities (C5)					
5. Destination image and hospitality (C1) and Innovative capacity of destinations (C6)					
6. Destination image and hospitality (C1) and Collaborative networking and destination branding (C7)					
7. Destination strategy and roadmap for wellness tourism (C2) and Destination image and hospitality (C1)					
8. Destination strategy and roadmap for wellness tourism (C2) and Infrastructure and wellness tourism carrying capacity (C3)					
9. Destination strategy and roadmap for wellness tourism (C2) and Man-made and cultural resources for wellness tourism (C4)					
10. Destination strategy and roadmap for wellness tourism (C2) and Wellness service experience and activities (C5)					
11. Destination strategy and roadmap for wellness tourism (C2) and Innovative capacity of destinations (C6)					
12. Destination strategy and roadmap for wellness tourism (C2) and Collaborative networking and destination branding (C7)					
13. Infrastructure and wellness tourism carrying capacity (C3) and Destination image and hospitality (C1)					

-
14. Infrastructure and wellness tourism carrying capacity (C3) and Destination strategy and roadmap for wellness tourism (C2)
-
15. Infrastructure and wellness tourism carrying capacity (C3) and Man-made and cultural resources for wellness tourism (C4)
-
16. Infrastructure and wellness tourism carrying capacity (C3) and Wellness service experience and activities (C5)
-
17. Infrastructure and wellness tourism carrying capacity (C3) and Innovative capacity of destinations (C6)
-
18. Infrastructure and wellness tourism carrying capacity (C3) and Collaborative networking and destination branding (C7)
-

Part 3 Questions regarding your thoughts on the priorities of condition indicators in each factor of wellness tourism destination competitiveness assessment

Instructions

Please specify the priority of the influence between the following condition pairs that are indicators according to your opinions, with the scoring criteria for the questionnaire as follows:

Priority level 0 is a level of no influence

Priority level 1 is a level of very low influence

Priority level 2 is a level of low influence

Priority level 3 is a level of high influence

Priority level 4 is a level of very high influence

Example

Condition Pairs Used in Comparing Levels of Mutual Influence: Destination image and hospitality (C1) Assessment Factor	What do you think is the priority level or the mutual influence level of these condition pairs?				
	4	3	2	1	0
	Very High	High	Low	Very Low	None
Business environment that promotes wellness tourism business (I1) and Safety and security of the destination (I2)					

***Based on the above example of comparing levels of mutual influence of condition pairs of the “Destination image and hospitality (C1)” assessment factor, it is showed that:**

“Business environment that promotes wellness tourism business (I1)” has a very low level of priority or influence to “Safety and security of the destination (I2)”.

Condition Pairs Used in Comparing Levels of Mutual Influence: Destination image and hospitality (C1) Assessment Factor	What do you think is the priority level or the mutual influence level of these condition pairs?				
	4	3	2	1	0
	Very High	High	Low	Very Low	None
1. Business environment that promotes wellness tourism business (I1) and Safety and security of the destination (I2)					
2. Business environment that promotes wellness tourism business (I1) and Health and hygiene management in wellness tourism areas or destinations (I3)					
3. Business environment that promotes wellness tourism business (I1) and Human resource readiness of personnel working in wellness tourism establishments or businesses with a responsibility of providing products and services to tourists (I4)					
4. Business environment that promotes wellness tourism business (I1) and Human resource readiness of local people with a responsibility of being good hosts to welcome wellness tourists (I5)					
5. Business environment that promotes wellness tourism business (I1) and Information technology and communication readiness (I6)					
6. Safety and security of the destination (I2) and Business environment that promotes wellness tourism business (I1)					
7. Safety and security of the destination (I2) and Health and hygiene management in wellness tourism areas or destinations (I3)					
8. Safety and security of the destination (I2) and Human resource readiness of personnel working in wellness tourism establishments or businesses with a responsibility of providing products and services to tourists (I4)					

9. Safety and security of the destination (I2) and Human resource readiness of local people with a responsibility of being good hosts to welcome wellness tourists (I5)

10. Safety and security of the destination (I2) and Information technology and communication readiness (I6)

11. Health and hygiene management in wellness tourism areas or destinations (I3) and Business environment that promotes wellness tourism business (I1)

12. Health and hygiene management in wellness tourism areas or destinations (I3) and Safety and security of the destination (I2)

13. Health and hygiene management in wellness tourism areas or destinations (I3) and Human resource readiness of personnel working in wellness tourism establishments or businesses with a responsibility of providing products and services to tourists (I4)

14. Health and hygiene management in wellness tourism areas or destinations (I3) and Human resource readiness of local people with a responsibility of being good hosts to welcome wellness tourists (I5)

15. Health and hygiene management in wellness tourism areas or destinations (I3) and Information technology and communication readiness (I6)

16. Human resource readiness of personnel working in wellness tourism establishments or businesses with a responsibility of providing products and services to tourists (I4) and Business environment that promotes wellness tourism business (I1)

17. Human resource readiness of personnel working in wellness tourism establishments or businesses with a responsibility of providing products and services to tourists (I4) and Safety and security of the destination (I2)

18. Human resource readiness of personnel working in wellness tourism establishments or businesses with a responsibility of providing products and services to tourists (I4) and Health and hygiene management in wellness tourism areas or destinations (I3)

19. Human resource readiness of personnel working in wellness tourism establishments or businesses with a responsibility of providing products and services to tourists (I4) and Human resource readiness of local people with a responsibility of being good hosts to welcome wellness tourists (I5)

20. Human resource readiness of personnel working in wellness tourism establishments or businesses with a responsibility of providing products and services to tourists (I4) and Information technology and communication readiness (I6)

21. Human resource readiness of local people with a responsibility of being good hosts to welcome wellness tourists (I5) and Business environment that promotes wellness tourism business (I1)

22. Human resource readiness of local people with a responsibility of being good hosts to welcome wellness tourists (I5) and Safety and security of the destination (I2)

23. Human resource readiness of local people with a responsibility of being good hosts to welcome wellness tourists (I5) and Health and hygiene management in wellness tourism areas or destinations (I3)

24. Human resource readiness of local people with a responsibility of being good hosts to welcome wellness tourists (I5) and Human resource readiness of personnel working in wellness tourism establishments or businesses with a responsibility of providing products and services to tourists (I4)

25. Human resource readiness of local people with a responsibility of being good hosts to welcome wellness tourists (I5) and Information technology and communication readiness (I6)

26. Information technology and communication readiness (I6) and Business environment that promotes wellness tourism business (I1)

27. Information technology and communication readiness (I6) and Safety and security of the destination (I2)

28. Information technology and communication readiness (I6) and Health and hygiene management in wellness tourism areas or destinations (I3)

29. Information technology and communication readiness (I6) and Human resource readiness of personnel working in wellness tourism establishments or businesses with a responsibility of providing products and services to tourists (I4)

30. Information technology and communication readiness (I6) and Human resource readiness of local people with a responsibility of being good hosts to welcome wellness tourists (I5)
