Scenario-Based Futures Research on Tourism Destination Competitiveness: An Interdisciplinary Framework Using Delphi and MICMAC

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Abstract

In recent years, tourism competitiveness has become a key factor in urban development, significantly affecting economic, social, and environmental sustainability. This study aims to identify and analyze the main drivers of tourism destination competitiveness using a futures research methodology. To address this gap, the study adopts a scenario-based futures research framework that integrates the Delphi method (for expert-driven identification of key drivers), MICMAC structural analysis (to evaluate systemic interdependencies), and Scenario Wizard (to generate internally consistent future scenarios). This methodological combination is rarely applied in tourism research and represents an interdisciplinary innovation that allows for dynamic modeling of tourism competitiveness under uncertainty. Through a systematic process, 25 initial factors were categorized into five dimensions, and 14 key drivers were extracted based on their influence. These drivers were then modeled using Scenario Wizard software, resulting in 14 plausible future scenarios. The study found that 80% of these scenarios indicate optimistic conditions for tourism development. The optimal scenario suggests strategic priorities such as fostering tourism culture, promoting inter-organizational coordination, enhancing investment and marketing, and strengthening infrastructure. These insights not only provide a practical framework for policymakers and urban planners but also contribute to the methodological advancement of interdisciplinary scenario-based tourism research.

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INTRODUCTION

In recent decades, tourism has emerged as a dynamic sector with substantial contributions to economic growth (Zhao, 2018). The concept of tourism competitiveness reflects a destination's ability to attract international visitors through quality, innovation, and sustainability (Simarmata et al., 2024; Zhang et al., 2023). Recent research has shifted from national performance to destination-level competitiveness, focusing on infrastructure, culture, governance, and innovation (Lasisi et al., 2023; Goffi et al., 2023). Unlike general urban competitiveness, tourism destination competitiveness (TDC) emphasizes attracting and retaining tourists while supporting sustainable development (de Paula Aguiar-Barbosa & Chim-Miki, 2024).

Tourism competitiveness is linked to job creation, poverty reduction, and improved living standards (Yan et al., 2022). The Travel and Tourism Competitiveness Index (TTCI) by the World Economic Forum provides a widely used benchmarking tool (Băbăț et al., 2023). However, these indices often lack foresight and fail to address uncertainty and system complexity.

This need for adaptive planning has intensified in response to global disruptions. COVID-19 revealed the fragility of tourism economies (Paul et al., 2022), while climate change, shifting behaviors, and digital transformation continue to reshape the sector (Scott, 2021; Meneghello, 2021). Addressing these dynamics requires forward-looking strategies.

Scenario-based futures research—combined with structural analysis—offers an effective approach to anticipate change and guide resilient planning (Goffi et al., 2023). Despite their relevance, such tools remain underused in tourism research.

This study adopts an interdisciplinary futures approach using the Delphi method, MICMAC analysis, and scenario planning to identify key drivers of competitiveness and provide a strategic framework for strengthening destination performance under uncertainty.

Research background

In the 21st century, tourism has evolved beyond an economic activity to become a key driver of sustainable regional development (Higgins Desbiolles, 2006). It is one of the world's largest industries, contributing around 9% of global GDP and 8% of employment (Hanandeh, 2013). Countries such as France, Japan, Spain, and the UK illustrate tourism's economic significance, with billions in annual revenue and millions of jobs supported (Ibragimova, 2024; Yanagi, 2023; Zamkova, 2024; Agarwal et al., 2024).

Recent studies emphasize that tourism competitiveness is no longer measured solely by economic performance but also depends on sustainability, innovation, and digital transformation (Lasisi et al., 2023). Investments in tourism not only boost growth but also contribute to environmental and cultural preservation. For example, Brazil's protected areas have demonstrated strong returns, both economically and

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ecologically (Souza et al., 2021). Destinations that integrate smart technologies, community empowerment, and sustainability tend to recover more quickly from global disruptions (de Paula Aguiar-Barbosa & Chim-Miki, 2024).

Empirical studies confirm tourism's long-term contribution to economic development when aligned with broader strategies such as financial development and urbanization (Kumar et al., 2015; Du et al., 2016; Ohlan, 2017). However, tourism alone is insufficient to guarantee growth and must be part of integrated planning.

Sharif et al. (2021) explored the complex relationship between globalization and tourism in the U.S., showing that while globalization enhances tourism, tourism's impact on economic and political dimensions is less predictable, especially post-crisis. These findings underscore the importance of resilience and adaptability in maintaining competitiveness.

Urban-level factors such as infrastructure, local demand, and place quality also influence destination appeal (Weng et al., 2022). Community engagement and resident empowerment are key to building local support for tourism initiatives (Ahn & Bessiere, 2022).

In digital tourism, Colabi (2021) highlighted that legal structures, organizational agility, and value creation are critical for successful e-tourism models. Community-based frameworks incorporating environmental, economic, social, and managerial factors also support sustainable tourism (Emami et al., 2021). Social acceptance and responsible tourist behavior further reinforce long-term tourism viability (Shahhoseini et al., 2021).

Overall, tourism competitiveness is shaped by intersecting economic, environmental, technological, and socio-cultural dimensions. However, few studies apply integrated, future-oriented methods to analyze competitiveness under uncertainty. This gap calls for interdisciplinary, scenario-based approaches capable of modeling the sector's complex and evolving dynamics.

Although many studies have addressed tourism competitiveness using standard indices and current condition analyses, they often lack forward-looking perspectives that account for uncertainty and complexity in long-term tourism planning. Given the increasing uncertainty in global tourism trends—driven by technological shifts, climate change, and geopolitical volatility—traditional planning tools often fall short in addressing complex, long-term challenges. Most existing literature focuses on static measurements and short-term evaluations, leaving a gap in exploring dynamic, future-oriented strategies. To fill this gap, the present study adopts a futures research methodology that integrates the Delphi method for expert consensus, MICMAC structural analysis for mapping variable influence, and scenario planning to simulate plausible development trajectories. This methodological combination is rarely applied in tourism competitiveness research and offers a systematic approach to identifying and analyzing key drivers that shape the future of tourism

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destinations. Therefore, this study not only addresses a methodological gap but also introduces a strategic framework for anticipating and managing future changes in tourism development. Based on this, the research questions are:

- What are the effective drivers for tourism development as a key factor for tourism destination competitiveness?

- What are the possible and desirable scenarios in the development of tourism as a factor of destination attractiveness and resilience?

Given the increasing complexity and uncertainty in tourism development, there is a pressing need to review existing scholarly approaches to tourism competitiveness and future planning. The following section critically examines relevant literature to identify conceptual and methodological gaps that justify the need for our integrative foresight framework.

RESEARCH LITERATURE
Destination Competitiveness

Destination competitiveness is a multidimensional concept shaped by the interaction of tourists, places, and destination management organizations (González-Rodríguez et al., 2023). It goes beyond attractiveness, encompassing a destination's ability to provide innovative, sustainable, and satisfying experiences that foster tourist loyalty (Santos et al., 2021). This complexity calls for a multidisciplinary lens, integrating insights from management, marketing, sociology, and technology (Xu & Au, 2023).

According to the World Tourism Organization (UNWTO), competitive destinations must adopt smart technologies, enhance digital access, and implement inclusive policies (Citaristi, 2022). Competitiveness also involves effective resource use, market adaptability, and distinctiveness (Ahn & Bessiere, 2022), aligning capabilities with trends like digital strategies and sustainable models (Khan et al., 2024).

Scholars emphasize the need to combine economic, technological, environmental, and behavioral dimensions in assessing competitiveness (Ferreira & Perks, 2020). As global competition intensifies, policy decisions must support balanced growth through governance, public-private partnerships, and digital integration (Woyo & Slabbert, 2021).

Crucially, competitiveness depends on stakeholder collaboration—among tourists, DMOs, investors, researchers, and businesses—to co-create adaptive strategies that match evolving demands. Such interconnected networks help maintain resilience and responsiveness in dynamic tourism environments (Wardhani & Widodo, 2020; Dwyer, 2022).

Tourism Competitiveness

Tourism competitiveness refers to the tangible and intangible attributes that enable a destination to perform effectively in the global tourism market. It involves enhancing appeal through valuable,

innovative, and sustainable experiences (Pérez León et al., 2022), while also adapting to changing consumer preferences, technological shifts, and sustainability goals (Font et al., 2023).

Understanding these drivers is essential for evidence-based policymaking. National-level frameworks and benchmarking tools assist policymakers in monitoring and refining competitiveness strategies (de Paula Aguiar-Barbosa & Chim-Miki, 2024; Wang et al., 2022).

Beyond traditional attractions, factors such as digital transformation, smart technologies, and immersive cultural offerings are increasingly crucial (Sustacha et al., 2023). Competitiveness is shaped by both objective indicators—e.g., price levels, infrastructure, and technological readiness—and subjective factors like image, environmental quality, and service experience (Gao et al., 2021).

Resilience during crises—such as pandemics or geopolitical shocks— is now seen as a core competitiveness component (Espiner et al., 2019). Other key determinants include safety, hospitality quality, accessibility, resident attitudes, cultural depth, and political stability (Gavurova et al., 2021).

Ultimately, collaboration among governments, private sectors, and communities is essential to sustaining tourism competitiveness in a dynamic and uncertain environment (Woyo & Slabbert, 2021).

The Impact of Competitiveness Indicators on Tourism Economic Growth

Numerous studies confirm a causal link between tourism development and economic growth (Tugcu, 2014). However, the extent of these benefits depends on factors such as exchange rates, capital, governance, digitalization, and market responsiveness (Watson & Deller, 2022).

While destinations with abundant natural and cultural resources often attract long-term tourist flows, recent research emphasizes that innovation, smart tourism, and diversification can reduce dependency on such resources (Rocha, 2022). Strategic planning is essential to enhance positive outcomes and mitigate risks like resource depletion and inflation (Murayama et al., 2022).

Travel and tourism competitiveness indices offer structured tools to assess a destination's growth potential. These indices influence areas such as investment, branding, service quality, policymaking, innovation, and workforce development by revealing key strengths and gaps.

Digital tools—such as big data analytics, AI recommendations, and immersive technologies—further support competitiveness and economic resilience (Gretzel, 2022; Sustacha et al., 2023). Their integration fosters a more adaptive, efficient, and visitor-oriented tourism ecosystem.

In short, competitiveness indicators are not just evaluative tools but strategic instruments that guide sustainable growth in an increasingly complex global tourism landscape.

Selected Indicators and Conceptual Model of the Research

There is no universal set of indicators applicable to all tourism destinations (Perna et al., 2018). However, the World Economic Forum's framework serves as a robust foundation due to its comprehensive nature. Recent studies emphasize incorporating digital readiness, crisis response, and destination intelligence into competitiveness metrics (Espiner et al., 2019).

Between 2007 and 2017, the Travel and Tourism Competitiveness Reports ranked countries using multidimensional indicators. In response to evolving challenges—especially post-COVID-19—the framework was revised and relaunched as the Travel and Tourism Development Index (TTDI) in 2022 (Woyo & Slabbert, 2021).

TTDI introduced major updates, including merging natural and cultural resources under "Drivers of Travel and Tourism Demand," adding a new pillar on sustainability, and emphasizing digital infrastructure, crisis preparedness, and inclusive travel policies (Sustacha et al., 2023; Gretzel, 2022).

These changes reflect a broader shift in competitiveness measurement—from focusing solely on economic performance to assessing adaptability, technological integration, and sustainability in tourism planning (Farhadikhah et al., 2024).

Despite the growing recognition of tourism competitiveness as a strategic priority, most existing studies remain confined to descriptive or index-based assessments. Few attempts have been made to explore dynamic interactions among competitiveness variables under future uncertainty. Furthermore, while MICMAC and Delphi methods have separately appeared in tourism forecasting studies, their combined and scenario-based application remains scarce. This conceptual and methodological gap justifies the need for a futures research approach—which is detailed in the following methodology section.

RESEARCH METHOD

This study is applied in purpose and follows a mixed-methods futures research approach, combining qualitative and quantitative techniques. Qualitative data were gathered via open-ended surveys, expert interviews, and document analysis. Quantitative data were obtained through structured Delphi questionnaires, and expert inputs were processed using MICMAC software for structural analysis (Truong et al., 2023).

The methodological process—illustrated in Figure 1—involves three key stages: identifying variables, analyzing their interactions using MICMAC, and categorizing them based on influence and dependency scores. Experts evaluated pairwise interactions using a scale from 0 (no influence) to 3 (strong influence), resulting in a square matrix where MICMAC identifies systemic roles of variables within the influence–dependence map.

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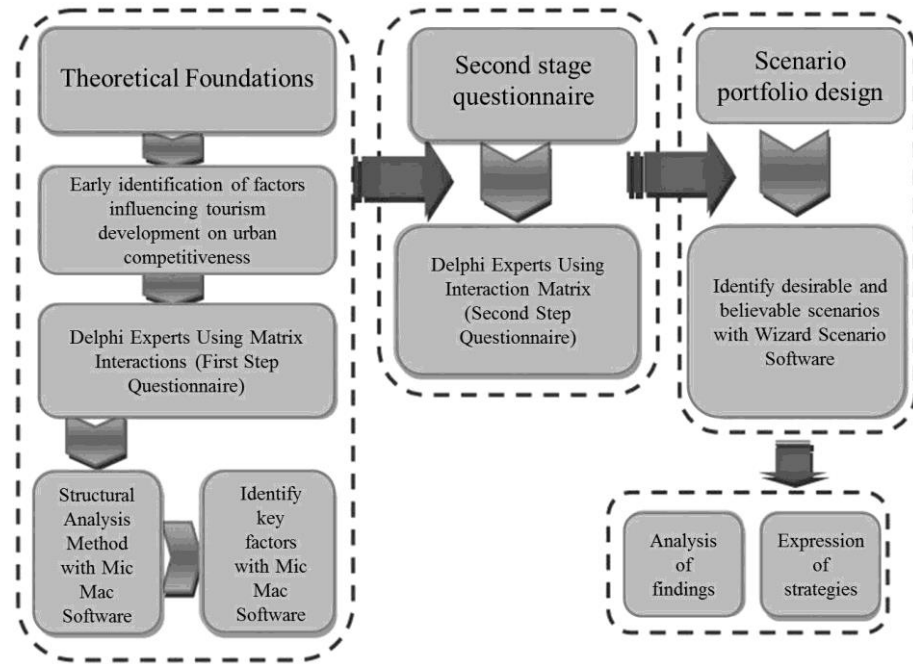
Figure 1. Conceptual framework of the research methodology, illustrating the sequential integration of Delphi and MICMAC techniques to identify and analyze key variables affecting urban tourism competitiveness
Source: Authors

The MICMAC model classifies variables into five categories based on their systemic role (Figure 2):

- Influential variables (top-left): High impact, low dependency—critical for system control.

- Relay variables (top-right): Both highly influential and dependent—unstable and sensitive, requiring constant monitoring.

- Dependent variables (bottom-right): Heavily influenced but exert little influence—outcomes rather than drivers.

- Independent variables (bottom-left): Minimal interaction with the system—generally insignificant for policy intervention.

-Adjustment variables (center): Located near the center—moderate values that may act as secondary drivers or buffers.
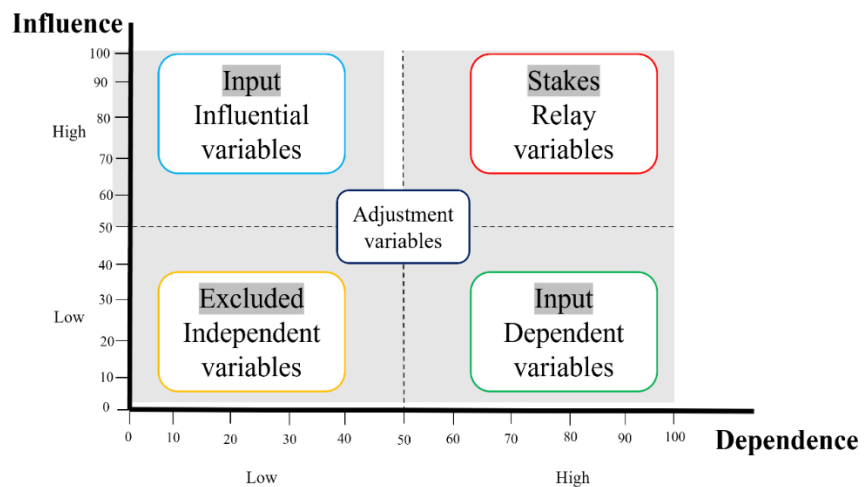
Figure 2. Distribution of key variables based on their level of influence and dependency using MICMAC analysis
Source: Chen (2018)

The Delphi method is a forecasting process and structured communication framework based on the results of multiple rounds of questionnaires sent to a panel of experts (Niederberger et al., 2021). The

Delphi technique emphasizes the expertise and relevance of participants over sheer their numbers (Naisola-Ruiter, 2022). Prior studies have demonstrated that Delphi panels of 10–15 highly qualified individuals can yield reliable and valid results in similar research contexts (Barrios et al., 2021). To implement the Delphi method, questionnaires were conducted in three stages. The first was an open-ended questionnaire identifying key factors influencing tourism's role in urban competitiveness.

In the second stage, experts evaluated these variables using pairwise weighting on a 0–3 scale to determine key drivers. The third stage involved assessing potential future scenarios based on the selected variables. This final step aimed to validate the scenario-building process and ensure their relevance for strategic planning. The Scenario Wizard software, developed by the Millennium Project (Niazi et al., 2021), was used to synthesize future scenarios based on the cross-impact matrix developed in the third round of the Delphi process. The input consisted of a 42×42 matrix representing the interactions among different states of 14 key variables. Experts rated each possible state's effect on others using a scale from -3 (strongly limiting) to +3 (strongly enabling). The software then applied a consistency algorithm to identify logically coherent combinations of states, filtering out scenarios with internal contradictions. Parameters such as consistency threshold and impact value cutoffs were calibrated based on expert input and prior studies (Cordova-Pozo and Rouwette, 2023). The final outcome included strong, moderate, and weak scenarios based on the systemic compatibility of variable states. Finally, by preparing desirable and believable scenarios, strategies have been proposed.

The statistical population of this study consisted of 12 industry professionals engaged in the tourism sector, including both private and government employees, managers specializing in geography and tourism planning, as well as professors and students within the field of tourism. A purposive sampling method was used to ensure that respondents possessed specialized expertise in tourism planning, policy, and management. The selection of the expert panel was based on clear inclusion criteria to ensure the relevance and depth of insights. Experts were required to have at least a postgraduate degree in tourism, urban planning, or related fields, along with a minimum of five years of professional or academic experience in tourism planning, policy-making, or destination development. This purposive sampling strategy ensured that each panelist possessed both theoretical knowledge and practical expertise relevant to the study's objectives. By focusing on quality rather than quantity, the research aligns with Delphi methodology standards, which prioritize the richness of expert input over statistical generalizability.

Among the participants, 67.4% were male and 32.6% female, with the majority aged 18–30 and a small proportion over 60. Approximately 37.2% held postgraduate degrees, and the highest share (33.3%) worked

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in the private tourism sector, reflecting a knowledgeable and diverse sample.

To validate the research tools, expert review confirmed the content validity of the questionnaires. Reliability was verified using Cronbach's alpha (0.818) and inter-rater consistency through Cohen's kappa (0.79), indicating substantial agreement (Vader et al., 2024). The Kolmogorov-Smirnov test showed that all variables followed a normal distribution ($p > 0.05$).

The combined use of the Delphi method and MICMAC structural analysis was selected to address the complexity and interdependence inherent in tourism development. Delphi enabled expert-driven identification and prioritization of key variables, particularly where empirical data was lacking. MICMAC provided a systematic framework to map variable interactions and distinguish influential versus dependent factors. This integration enhances both the depth and structure of analysis, supporting more nuanced and actionable scenario building.

The synergy of these methods offers a robust platform for strategic foresight in tourism planning, especially under conditions of uncertainty. It allows researchers and policymakers to identify not only which factors matter most, but also how they dynamically interact over time.

RESULTS

An open-ended survey and literature review were conducted using the Delphi method to identify key factors shaping the future of tourism as a driver of urban competitiveness. Experts were asked to list influential variables across diverse tourism categories—historical, natural, cultural, recreational, sports, artistic, religious, health, work, and educational—selected based on prior research and validated by expert consensus. This comprehensive categorization ensured coverage and conceptual overlap.

In the second stage, a structured questionnaire was distributed to the same panel, who rated the importance of each variable using a Likert scale. As a result, 25 key variables were selected for final analysis from an initial pool of 104, refined through both expert validation and statistical assessment. These were grouped into five thematic areas. Table 1 presents the initial variables identified during the first Delphi round, based on source reviews and expert input.

Concurring to the number of factors, the measurements of 25 * 25 lattice, which were set in five distinctive areas, were analyzed utilizing auxiliary investigation strategy and computer program MICMAC to extricate the most components affecting tourism improvement with the urban competitiveness approach. The number of rehashes was considered twice. The lattice filling rate is 59.80%, which speaks to a cruel coefficient that appears common due to the dissemination of the factors influencing the break advancement. Among 374 connections assessed in this lattice, 251 were zero, 205 were one, 86 were two, and 83 were three. On the other hand, the network based on measurable files with information revolution twice has 100% utility and optimization

which demonstrates tall legitimacy of the survey and its answers. Table 2 presents the output of the analysis, in which the main variables are ranked in terms of their direct and indirect impact and influence. (Table 2)

Table 1. Initial Set of Variables Influencing Urban Tourism Competitiveness, Identified in Delphi

Group	Factor
Organizational and managerial	P_1. Macro government policies; P_2. Tourism comprehensive plan; P_3. Skilled manpower; P_4. Coordination of organizations; P_5. Regulation of tourism laws and regulations.
Sociocultural	P_6. Awareness of the local community and tourists; P_7. Holding seasonal and cultural festivals; P_8. Crafts; P_9. Tourism culture; P_{10}. Security.
Economic	P_{11}. Private Sector Investments; P_{12}. Distribution of Facilities; P_{13}. Entrepreneurship; P_{14}. Funding; P_{15}. Marketing and Advertising.
Infrastructure and services	P_{16}. Urban and Regional Transport Network; P_{17}. Health Network; P_{18}. Infrastructure; P_{19}. Tours and Agencies; P_{20}. Welfare Services.
Natural	P_{21}. Water Resources; P_{22}. Climate; P_{23}. Vegetation and Animals; P_{24}. Beautifying Urban Space; P_{25}. Polluting Resources

Source: Alavi et al. (2022); Kumar & Dhir (2020); Matin (2021); Lopes et al. (2018); Rahmani & Rahnama (2020)
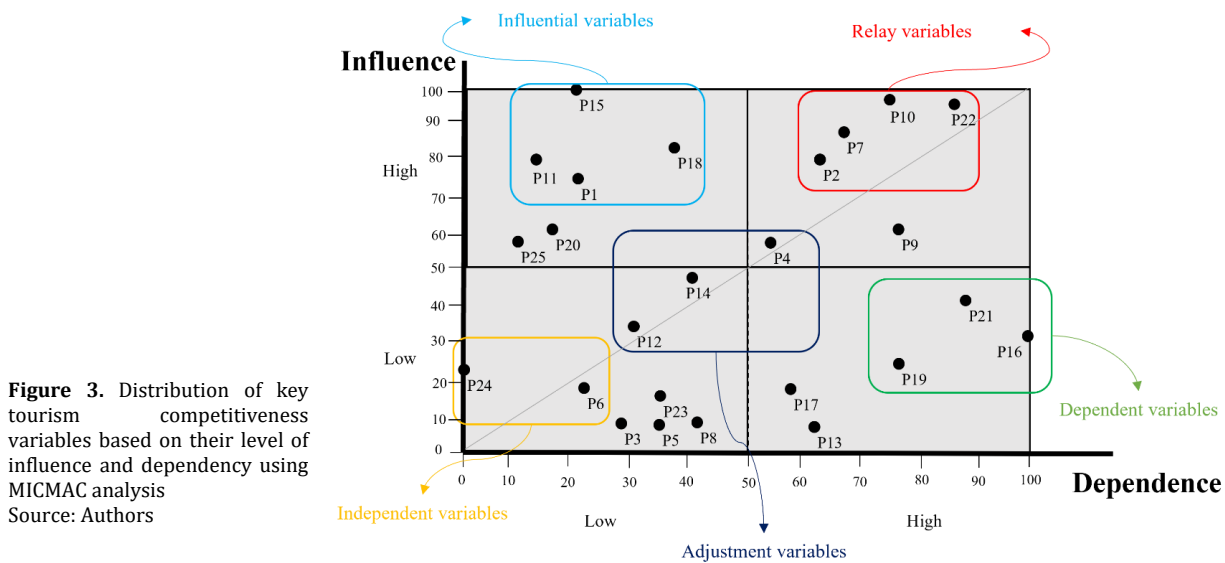
Table 2. Direct and Indirect Influence and Dependency Rankings of Key Variables Based on MICMAC Analysis

Rank	Title	Direct influence	Title	Direct affected	Title	Indirect influence	Title	Indirect affected
1	P_{15}	623	P_{16}	623	P_{10}	610	P_{16}	602
2	P_{10}	591	P_{21}	575	P_{22}	572	P_{21}	564
3	P_{22}	591	P_{22}	559	P_{11}	570	P_{22}	557
4	P_7	575	P_{19}	511	P_{15}	564	P_{19}	521
5	P_9	543	P_{10}	511	P_7	555	P_{13}	493
6	P_{18}	543	P_7	479	P_9	552	P_{10}	485
7	P_2	543	P_{17}	463	P_{18}	540	P_{17}	484
8	P_{11}	527	P_{13}	463	P_2	530	P_2	466
9	P_1	511	P_2	463	P_1	487	P_4	453
10	P_{20}	463	P_4	431	P_{20}	476	P_7	442
11	P_{25}	447	P_8	399	P_{25}	460	P_8	400
12	P_4	431	P_{23}	383	P_4	413	P_{23}	377
13	P_{14}	399	P_{14}	383	P_{14}	413	P_{18}	376
14	P_{21}	383	P_5	383	P_{16}	368	P_5	374
15	P_{16}	351	P_{18}	367	P_{21}	362	P_6	351
16	P_{12}	319	P_3	351	P_{19}	318	P_9	342
17	P_{19}	303	P_9	351	P_{12}	286	P_{14}	342
18	P_{17}	255	P_{12}	335	P_{23}	264	P_{15}	337
19	P_6	255	P_6	319	P_{24}	263	P_3	325
20	P_{24}	239	P_{15}	303	P_3	250	P_{12}	308
21	P_{23}	239	P_{20}	287	P_5	244	P_{11}	304
22	P_3	223	P_1	287	P_6	244	P_1	296
23	P_5	223	P_{25}	271	P_{17}	227	P_{20}	278
24	P_8	223	P_{11}	271	P_8	222	P_{25}	262
25	P_{13}	191	P_{24}	223	P_{13}	197	P_{24}	248

The output of the Interaction Analysis Model reveals the relationships between factors, and MICMAC is capable of transforming these relationships into direct and indirect influence matrices, as well as

visually interpretable system structures, making it easier to analyze relationships and framework structures. As shown in Figure 3, the identified factors were mapped onto an Influence-Dependence Chart to provide a graphical representation of their roles in the system. (Figure 3)

According to the comes about of the investigation, Table 3 appears among 25 components which were explored in this ponder, 14 components were chosen as the most components impacting tourism improvement with an urban competitiveness approach. Table 3 also categorizes variables based on their role in the urban tourism competitiveness system. (Table 3)

Figure 3. Distribution of key tourism competitiveness variables based on their level of influence and dependency using MICMAC analysis
Source: Authors

Table 3. Classification of Key Variables According to Their Strategic Roles in the Influence-Dependency Map (MICMAC Output)

Group	Factor
Input or Influential variables	P_1. Macro government policies; P_{11}. Private Sector Investments; P_{15}. Marketing and Advertising; P_{18}. Infrastructure.
Stakes or Relay variables	P_2. Tourism comprehensive plan; P_7. Holding seasonal and cultural festivals; P_{10}. Security; P_{22}. Climate.
Adjustment variables	P_4. Coordination of organizations; P_{12}. Distribution of Facilities; P_{14}. Funding.
Output or Dependent variables	P_{16}. Urban and Regional Transport Network; P_{19}. Tours and Agencies; P_{21}. Water Resources.

As shown in Figure 3, the MICMAC analysis reveals a highly interdependent structure within the tourism competitiveness system. Variables such as P15 (Marketing and Advertising), P11 (Private Sector Investment), and P1 (Macro Government Policies) are located in the upper-left quadrant, identifying them as Input or Influential variables. These are high-leverage points—interventions in these areas are likely to have widespread ripple effects throughout the system. For instance, improvements in marketing not only enhance destination visibility but also indirectly influence infrastructure use, investment flow, and tourist behavior.

On the other hand, variables such as P16 (Urban and Regional Transport Network) and P21 (Water Resources) are classified as Dependent variables, meaning they are highly sensitive to changes in other parts of the system. This suggests that while these elements are crucial for tourist experience, their improvement relies on upstream decisions in governance, investment, and planning.

Interestingly, P10 (Security) and P22 (Climate) function as Relay variables, both influencing and being influenced by multiple other factors. Their dual role reflects their strategic importance: they act as amplifiers of system behavior. For example, security concerns can destabilize marketing efforts and infrastructure investment, while at the same time, they are influenced by broader socio-political and environmental dynamics.

The presence of P4 (Coordination among Organizations) and P14 (Funding) near the center of the influence-dependence map suggests they serve as Adjustment variables—factors that may not be primary drivers but are essential for balancing system behavior. These elements often determine the system's capacity to respond and adapt to external shocks.

Taken together, these findings point to a non-linear, interconnected system where targeted intervention in a few influential variables—particularly macro government policies, private sector investment, and infrastructure development—can yield system-wide benefits. This insight is essential for policymakers aiming to build a resilient, adaptive, and competitive tourism system.

A total of 42 probable states were generated for 14 key drivers, considering optimistic, pessimistic, and moderate modes. Experts evaluated these through a 42×42 cross-impact matrix, rating the effect of each state on others using a scale from -3 (limiting) to +3 (enabling). The system calculated approximately 318 million combined scenarios, though most serve statistical purposes rather than policy guidance.

Based on expert input and Scenario Wizard software analysis, the results yielded:

5 strong (high-probability) scenarios

14 high-compatibility (believable) scenarios

4111 weak or inconsistent scenarios

The software does not select scenarios based on desirability but on logical consistency among variable interactions. Thus, outputs range from fully desirable to entirely critical. Weak scenarios, being highly unstable, are unsuitable for planning. The 14 believable scenarios fall between extremes and offer viable bases for strategic planning—categorized as Desired (D), Static (S), and Crisis (C) in Table 4.

Among these, most scenarios reflect favorable conditions, indicating strong potential for tourism development within urban competitiveness frameworks. Overall, 80% were classified as desired, 11% as static, and 9% as critical. Scenario 1—considered the best-case—emerges as the strategic benchmark for tourism-driven urban competitiveness.

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Table 4. Summary of the Developed Future Scenarios Based on Variable Configurations and Strategic Assumptions (D: Desired (Green); S: Static (Gray); and C: Crisis (Red))

	Macro government policies	Tourism culture	Private Sector Investments	Marketing and Advertising	Infrastructure	Tourism comprehensive plan	Holding seasonal and cultural festivals	Security	Climate	Coordination of organizations	Distribution of Facilities	Funding	Urban and Regional Transport Network	Tours and Agencies	Water Resources
1	D	D	D	D	D	D	D	D	D	D	D	S	S	D	S
2	S	D	D	D	D	D	D	D	D	D	D	S	S	D	S
3	S	D	D	D	D	D	S	D	D	D	D	S	S	D	S
4	D	D	D	D	D	D	D	D	D	D	D	S	S	S	S
5	S	D	D	D	D	D	D	D	D	D	D	S	S	S	S
6	S	D	D	D	D	D	S	D	D	D	D	S	S	S	S
7	D	D	D	D	D	D	D	D	D	D	S	S	S	S	S
8	D	D	D	D	D	D	D	D	S	D	S	S	S	S	S
9	S	D	D	D	D	D	D	D	S	D	S	S	S	S	S
10	S	D	D	D	D	D	S	D	S	D	S	S	S	S	S
11	C	C	D	S	D	C	S	C	S	S	S	S	C	S	S
12	C	C	D	C	D	C	S	C	S	S	S	S	C	S	S
13	C	C	C	C	C	S	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C

DISCUSSION

Tourism planning encompasses multiple dimensions due to its complex and dynamic nature. Planning for future development as a component of urban competitiveness has become essential, particularly given the sector's exposure to external shocks and its interdependence with urban systems. Traditional approaches often fall short in addressing such uncertainties, reinforcing the need for futures research and scenario-based methodologies to support more adaptive tourism strategies.

In this study, we adopted a future-oriented system approach, integrating Delphi and MICMAC techniques to identify critical variables and simulate plausible development trajectories. This scenario-driven framework enables planners to anticipate systemic changes and align strategies accordingly.

Three scenario groups were developed—Crisis, Intermediate, and Desired—to explore a range of possible futures. Each reflects different combinations of key variables and offers unique insights into the challenges and opportunities of urban tourism development.

- **Crisis Scenarios: Unfavorable Conditions for Tourism Development**

Crisis scenarios represent the most adverse trajectories, where systemic vulnerabilities dominate. These are characterized by weak

governance, low investment, poor branding, environmental degradation, and fragmented institutional coordination. Neglecting city branding, ineffective legal frameworks, and unsustainable tourism practices collectively erode competitiveness and reduce a destination's ability to adapt or recover.

From a policy standpoint, these scenarios serve as early warnings, highlighting the need for capacity building and strategic interventions. Key measures include strengthening governance through integrated policies, incentivizing long-term investment in infrastructure and human capital, and leveraging smart tourism technologies to build adaptive capacity.

• **Intermediate Scenarios: Static Conditions and Limited Progress**

Intermediate or "status quo" scenarios reflect slow, fragmented progress, often resulting from institutional inertia or lack of consensus. Variables like transportation infrastructure and water management frequently appear as stable, indicating resistance to short-term changes. These scenarios point to a need for sustained investment in infrastructure and human resource development.

Characteristics include limited urban branding, insufficient stakeholder coordination, and underdeveloped tourism promotion. Recommended actions include:

Expanding public-private partnerships,

Enhancing tourism education and skills training,

Strengthening regional collaboration.

These efforts aim to address systemic fragmentation and foster gradual, consistent improvement in competitiveness.

• **Desired Scenarios: Favorable Conditions for Urban Tourism Development**

Desired scenarios depict optimal conditions, shaped by effective governance, integrated policies, smart infrastructure, and coordinated investment. These scenarios demonstrate the power of collective vision and strategic alignment among stakeholders in creating high-impact tourism systems.

Recurring variables in these scenarios—such as smart technologies, sustainable policies, and advanced marketing—reflect a shared expert consensus on their centrality to tourism competitiveness. Their consistent presence suggests that these factors are both achievable and instrumental in fostering growth.

Strategic recommendations to realize these scenarios include:

Advancing smart tourism infrastructure (IoT, AI, big data),

Implementing sustainable tourism policies,

Enhancing destination branding and market research.

These measures are supported by previous research (Ferreira & Perks, 2020; Woyo & Slabbert, 2021) that underscore the importance of aligning economic, environmental, and social indicators in tourism development.

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Our findings validate earlier studies identifying governance, infrastructure, and marketing as key drivers of competitiveness (Goffi et al., 2023; Ferreira and Perks, 2020). Additionally, the emergence of "climate" and "security" as influential relay variables underscores the increasing relevance of environmental and geopolitical uncertainties.

While Espiner et al. (2019) highlight the primacy of resilience and sustainability, our results suggest that without strategic coordination and investment, these values may not translate into effective action in uncertain contexts. This distinction points to the importance of integrated and adaptive planning that combines sustainability goals with operational pragmatism.

Tourism competitiveness is influenced by a spectrum of variables across physical, climatic, demographic, institutional, and economic dimensions. Cities aiming to enhance their competitive edge should prioritize strategies that address:

Geographic and natural advantages,

Seasonal climate dynamics,

Demographic shifts and tourist behavior,

Policy frameworks and investment incentives,

Employment generation and financing models,

Cultural heritage and community engagement.

By systematically addressing these areas, cities can build resilient, inclusive, and future-ready tourism ecosystems.

Moreover, this study's methodological framework provides transferable insights. In culturally rich regions, promoting local participation and tourism culture is essential for community-based tourism. In emerging economies, investment in branding and infrastructure aligned with regional goals can create a competitive edge. In environmentally vulnerable zones, resilience-focused planning and sustainability integration are key. The scenario-based approach offers a scalable tool that allows policymakers to tailor strategies based on their unique risk and resource profiles.

For instance, coastal destinations facing climate change may focus on adaptive infrastructure and conservation, while post-conflict regions may prioritize safety, perception management, and trust-building.

The designed scenarios also implicitly account for current global dynamics such as the aftermath of the COVID-19 pandemic, climate change, and digital transformation. For instance, scenarios that emphasize infrastructure resilience, inter-agency coordination, and smart tourism technologies reflect a direct response to vulnerabilities exposed during the pandemic. In the plausible scenarios, climate appears as a critical uncertainty—where favorable scenarios (e.g., Scenario 1 and 4) assume climate stability and environmental resilience, while pessimistic scenarios (e.g., Scenario 13 and 14) reflect climate disruption and its adverse effects on tourism seasonality and attractiveness. Likewise, although not explicitly labeled as "digital infrastructure," variables such as "marketing and advertising" (P15) and "coordination of

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organizations" (P4) indirectly capture the role of digital transformation. In desirable scenarios, digital tools are assumed to enhance inter-agency coordination and promote smart tourism systems, while in static or crisis scenarios, lack of integration results in inefficiency and reduced competitiveness. These elements collectively ensure that the scenario framework remains responsive to evolving global challenges, enabling adaptive capacity for policymakers to address future shocks proactively.

While the findings of this study provide actionable insights for urban tourism development, their applicability in diverse tourism economies must be considered with caution. In low-income or politically unstable regions, for example, the successful implementation of strategic drivers such as inter-organizational coordination or infrastructure investment may be limited by institutional weaknesses or funding constraints. Similarly, in regions with informal tourism economies or limited data infrastructure, methods like Delphi or MICMAC may face feasibility challenges due to lack of structured expert networks or consistent indicators.

These constraints suggest that while the methodological approach is robust, its application requires contextual adaptation. Policymakers and planners should calibrate the tools and strategies identified here to local institutional capacities, stakeholder dynamics, and governance models. This critical reflection also opens the door for future research on adapting futures research methods to fit a broader range of socio-economic and political contexts in tourism planning, guided by local realities but supported by a flexible and future-oriented planning model.

CONCLUSION

This study sought to identify effective, future-oriented strategies to strengthen the role of tourism in urban competitiveness using a combination of Delphi and MICMAC methods. Through expert consultation and structural analysis, 14 key variables were identified as critical to tourism development. These variables formed the basis for constructing three scenarios—desired, intermediate, and crisis—to explore potential development paths. Among them, the desired scenario was found to be the most feasible and aligned with global trends in sustainable tourism and digital transformation.

Key elements of the desired scenario include expanding tourism culture, enhancing inter-organizational collaboration, increasing investment, improving the business environment, and fostering innovation and entrepreneurship. These priorities reflect the sector's need for strategic coordination, smart infrastructure, and targeted marketing to boost competitiveness.

To operationalize these insights, Table 5 presents strategic priorities across five key domains:

Table 5. Core Features and Strategic Priorities of the Optimal Scenario for Tourism Destination
Competitiveness

Group	Strategy
Organizational and managerial	Coordinating the preparation of a comprehensive tourism plan by preserving and promoting urban, environmental and tourism values; Applying efficient and effective management for tourism planning attracts and coordinating all key infrastructure factors in a collaborative workgroup on tourism, cultural heritage, sustainable development, and tourism growth.
Sociocultural	Ensuring security at the regional level; Educating and training local communities to engage effectively with tourists; Promoting and developing traditional handicrafts and cultural industries
Economic	Increasing the share of tourism development budgets; Introducing tourism investment opportunities to investors; Encouraging private sector participation through supportive policies such as tax exemptions and incentives for establishing and expanding cultural, artistic, and tourism service centers; Enhancing marketing and awareness initiatives to highlight tourism benefits.
Infrastructure and services	Improving the performance of attractions, transportation, and accommodation facilities in terms of accessibility and affordability for diverse social groups; Ensuring that available facilities meet international tourism standards; Expanding infrastructure development in alignment with tourism potential; Increasing financial allocations for upgrading and expanding urban and regional transport networks
Natural	Protecting and conserving natural diversity; Utilizing environmental and climatic advantages of the region to enhance tourism appeal; Modernizing and integrating eco-tourism initiatives with broader tourism strategies.

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Achieving long-term success depends on aligning strategies with uncertainty-aware planning, ensuring adaptive capacity in the face of climate change, technological disruptions, and market volatility. Scenario-based approaches offer a flexible framework for translating theoretical models into actionable policy tools.

The study's findings align with earlier literature emphasizing governance, sustainability, and infrastructure as key to tourism growth. Notably, variables like climate and security emerged as influential relay factors, signaling an increased sensitivity to external risks. While previous studies (e.g., Espiner et al., 2019) stressed resilience and sustainability, our results suggest that these values alone are insufficient without strategic investment and inter-agency coordination.

Some limitations of the study include the time-intensive Delphi process, limited expert panel size, and context-specific nature of the findings. Additionally, the integration of qualitative insights with quantitative models posed technical and methodological challenges. The subjectivity of scenario construction also limits generalizability to some extent.

Future research could explore emerging trends and variables beyond those examined here. Comparative studies across different cities or countries would enhance external validity. Furthermore, the integration of real-time data, AI-based foresight tools, and smart tourism analytics

could refine the scenario development process and improve policy responsiveness.

Beyond policymaking, the study provides a methodological framework for understanding the mental models of tourism planners, supporting participatory approaches, and enhancing collaboration between governments, businesses, and communities.

Beyond policymaking, the study provides a methodological framework for understanding the mental models of tourism planners, supporting participatory approaches, and enhancing collaboration between governments, businesses, and communities.

From an urban design perspective, the identified drivers—such as infrastructure quality, sustainability, and governance—directly influence spatial development, mobility networks, and public space design. The scenarios can inform urban planners and architects in creating flexible, tourism-oriented environments that promote resilience and cultural identity. Embedding futures thinking into design processes enables cities to build spaces that are not only competitive but also adaptive and sustainable.

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Resume

Mohammad Hossein SAMAR, a graduate of Islamic Azad University, Central Tehran Branch, he has been passionate about traditional Iranian architecture and historic buildings since his teenage years, which led him to work in restoration and

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