

## Structural Analysis of Critical Variables for Culinary Tourism Development: A MICMAC Approach

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### Abstract

This study analyzed the structure of critical variables influencing the development of culinary tourism in Bogor City using the MICMAC (Cross-Impact Matrix Multiplication Applied to Classification) approach. Data were collected through focus group discussions with key stakeholders, and matrices of direct and indirect influences among variables were then constructed to generate an influence–dependence map. The analysis results identified four determinant variables that acted as stable primary drivers of the system, namely government policy, budget and resource support, multi-stakeholder collaboration, and infrastructure. In addition, a group of relay variables—including leadership, environment, location, atmosphere, communication, food image, uniqueness, social media, food quality, promotion, food safety, food service, human resources, service quality, management, and price—functioned as the main link between determinant variables and outcome variables, namely tourist experience, destination image, loyalty, and economic impact. Culinary cultural identity (food culture, authenticity, diversity) played a symbolic strengthening role but did not act as a primary structural driver. These findings highlighted the need for development strategies that focused on strengthening determinant variables and managing relay variables in an integrated manner to enhance the competitiveness and sustainability of culinary tourism in Bogor.

**Keywords:** MICMAC; culinary tourism; structural analysis; Bogor; key variables

**JEL classification:** L83, L80, Z32

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### 1. INTRODUCTION

Culinary tourism is recognized as one of the key sectors within the tourism industry, with a significant contribution to increasing tourist arrivals, generating employment, and fostering local business development (Safian et al., 2021). It also has a multiplier effect that strengthens regional economies through its linkages with agriculture, trade, transportation,

accommodation, and tourism-supporting services (Ndlovu, 2023; Di-Clemente et al., 2020). It also has a multiplier effect that strengthens regional economies through its linkages with agriculture, trade, transportation, accommodation, and tourism-supporting services, particularly in urban areas (Wondirad & Verheye, 2023).

Culinary tourism is a form of experience-based travel that focuses on the exploration of local cuisine and food-related activities, with local food and beverages serving as the main pull factors (Zhang et al., 2019). These activities include visits to food producers, culinary festivals, market exploration, participation in culinary programs, and tasting of a variety of food products (Vuksanović et al., 2024). From a destination development perspective, culinary tourism strengthens destination image, increases competitiveness, enriches tourist experiences, and has the potential to extend length of stay (Kovalenko et al., 2023; Levyda et al., 2024).

Indonesia holds a highly promising position in culinary tourism due to its rich culinary traditions rooted in cultural, ethnic, and local resource diversity (Untari & Satria, 2025). The abundance of natural and cultural resources across regions encourages the emergence of distinctive culinary products, positioning cuisine as a strategic asset for destination differentiation (Kristanti et al., 2019; Hajarrahmah, 2017). Within a sustainable tourism framework, this potential is ideally directed not only toward short-term growth in arrivals, but also toward long-term orientations that secure local economic sustainability, preserve culinary heritage, and maintain destination carrying capacity.

At the national level, culinary tourism is regarded as one of the pillars for strengthening tourism and creative economy competitiveness through its contribution to local economic activity and employment (Wulan, 2025; Thio et al., 2024). In Indonesia, culinary tourism is not limited to food consumption, but also functions as a medium to promote cultural diversity and local identity (Wijaya, 2019). The wide variety of culinary offerings across regions, with distinct flavors and preparation techniques, supports the formation of destination image and differentiation in an increasingly competitive tourism market (Sukenti, 2014).

Bogor City is one of Indonesia's tourist destinations with a strong culinary appeal, representing a blend of traditional Sundanese culture, colonial heritage, and modern urban dynamics (Bonanza et al., 2023). A range of traditional foods, the presence of contemporary culinary venues, and geographical proximity to Jakarta as the national activity hub and gateway for domestic and international tourists position Bogor as a highly promising candidate for a nationally prominent culinary destination. Previous studies indicate that culinary experiences are among the main motivations for visiting Bogor (Kristyadi & Facrureza, 2024), while the culinary sector is identified as a leading subsector of the creative economy and receives policy support through local development plans that designate culinary tourism as a key focus of tourism development in the city (Bogor City Regional Development, 2024).

Recent data show that the number of restaurants in Bogor City increased from 616 units in 2021 to 918 units in 2024, although a slight decrease of 0.54% occurred in 2024 compared with the previous year (Statistics Indonesia [BPS], 2025). This trend indicates a

dynamic culinary sector that is not yet proportionally reflected in the strengthening of Bogor's position as a leading culinary destination or in the optimal performance of tourism and business welfare. Constraints related to infrastructure, human resource capacity, and the effectiveness of promotion can hinder the full utilization of a destination's culinary tourism potential. In Bogor City, this situation reveals a gap between its potential as a culinary hub, supported by a mix of traditional and modern cuisines and proximity to Jakarta, and its actual realization as a truly competitive and prominent culinary destination. These conditions indicate that the development of culinary tourism in Bogor City is constrained by weak policy synergy, inadequate supporting infrastructure and promotion, the erosion of traditional culinary practices, and the absence of systematic structural mapping of key variables. As a result, Bogor City's substantial culinary potential has not yet translated into a competitive and sustainable culinary destination. This gap between potential and actual performance constitutes the main research problem that this study seeks to address.

In this context, local economic sustainability becomes a critical issue because most culinary businesses in Bogor consist of micro, small, and medium enterprises that are vulnerable to demand fluctuations, changing culinary trends, and competitive pressure from larger business networks (Statistics Indonesia [BPS], 2025). At the same time, the preservation of culinary culture faces challenges such as declining use of traditional recipes, shifting preferences among younger generations, and commercialization that may erode the authenticity of local cuisine (Mau et al., 2024). Without appropriate governance, the development of Bogor as a flagship culinary destination risks generating trade-offs between economic growth, cultural preservation, and the sustainability of destination carrying capacity.

As part of a complex tourism system, the development of culinary tourism involves multiple interacting factors, ranging from cultural, economic, and institutional aspects to environmental dimensions, operating through both direct and indirect relationships (Long et al, 2024; Long, 2012; Abriani, 2022; Fistola & La Rocca, 2017). In China, for instance, the culinary tourism system is analyzed through six main dimensions—government support, stakeholder involvement, destination image, visitor experience, destination marketing, and core product quality—which are further detailed into dozens of specific factors (Long et al., 2024). These findings underscore the need for a comprehensive and systematic approach in designing culinary tourism development strategies (Horng & Tsai, 2012; Wondirad et al., 2021).

In the case of Bogor City, efforts to become a leading culinary destination require not only an understanding of the list of determinant factors, but also an understanding of the structure of influence-dependence relationships among these factors in the development process. This need points to the importance of viewing the destination as a system rather than as a collection of isolated variables. Under these conditions, structural analysis becomes a relevant approach to identify key variables that most strongly shape development trajectories, as well as variables that function as supporting or consequential elements.

Within this framework, the present study uses MICMAC (Cross-Impact Matrix

Multiplication Applied to Classification) as an analytical approach to conduct structural analysis of critical variables influencing the development of sustainable culinary tourism in Bogor City (Godet, 1994; Stratigea, 2013). MICMAC is thus positioned as a tool to uncover the configuration of key factors required for designing strategies to develop Bogor City as a sustainable leading culinary destination. The method enables the mapping of each variable's position based on its level of influence (driving power) and dependence, thereby identifying primary driving variables, supporting variables, outcome variables, and connecting variables that form the system's structure. MICMAC is thus positioned as a tool to uncover the configuration of key factors required for designing strategies to develop Bogor City as a sustainable leading culinary destination.

Based on this background, the study aims to: (1) identify critical variables that influence the development of sustainable culinary tourism in Bogor City; (2) analyze the structural relationships and the levels of influence and dependence among these variables; and (3) determine key variables that can serve as the basis for formulating long-term strategies for culinary tourism development that support local economic sustainability, culinary heritage preservation, and destination carrying-capacity management. The findings are expected to provide theoretical contributions to the development of system-based conceptual models for sustainable culinary tourism in Indonesia, as well as strategic recommendations for local governments, businesses, and stakeholders in formulating policy directions and development scenarios for culinary tourism in Bogor City and other regions with similar characteristics.

## **2. METHODS**

### **2.1 Research Design and Location**

A structural analysis approach was used in this study. Bogor City was selected as the research site because it was one of the main tourist destinations in the Jabodetabek (Jakarta, Bogor, Depok, Tangerang, Bekasi) area, with a strong culinary tradition and geographical proximity to Jakarta as the primary tourism market. Culinary tourism had been designated as one of the priority areas in local development and tourism planning documents, and the number of culinary businesses had shown an increasing trend in recent years, indicating a dynamic culinary tourism system that was relevant for structural analysis.

### **2.2 Data Collection**

Primary data were collected through focus group discussions (FGDs) using the World Café approach to encourage participatory dialogue and active engagement among participants. The FGD involved fifteen participants representing key stakeholders in the development of culinary tourism in Bogor City, including representatives of the Department of Tourism and Culture, culinary business owners, tourism destination managers, members of culinary tourism communities, a coordinator of culinary MSMEs, academics in culinary tourism, representatives of social organizations, and media representatives. This composition was intended to capture diverse perspectives from policy, business, community, and supporting actors within the culinary tourism ecosystem.

The FGD was facilitated by an expert in systems and modeling, and participants were divided into three small groups, each guided by one facilitator and one table administrator. The FGD was conducted in two rounds. The first round focused on identifying system variables of culinary tourism that were relevant to the objective of developing Bogor as a sustainable culinary destination, and the session lasted for about three hours and ended with group presentations to reach agreement. Through a combination of systems logic, literature review, and expert judgment, a list of system variables for the development of culinary tourism in Bogor City was agreed upon (Table 1). The final set of 27 variables was thus derived from an iterative process that combined systems thinking, a broad review of culinary tourism and tourism system literature, and the expert judgment of stakeholders to ensure a strong theoretical and empirical basis for the MICMAC analysis.

The second round was conducted in the form of a workshop to assess relationships among variables and to complete the main matrices in the MICMAC software. At this stage, participants assessed the levels of influence and dependence among variables based on their empirical experience and understanding of the culinary tourism system in Bogor City. This session also lasted for about three hours and produced an influence–dependence matrix that was subsequently used in the structural analysis to classify key variables.

**Table 1. Aspects and Key Variables of Culinary Tourism in Bogor City**

No	Aspect	Description	Variables
1	Government Support and institutional	The government role in providing infrastructure, policies, and resource allocation to support sustainable tourism growth.	1. Policy 2. Budget and other resources support 3. Infrastructure
2	Stakeholder Engagement	Collaboration between local communities, businesses, government, and NGO is necessary to achieve a balance of mutual interests.	4. Pentahelix collaboration
3	Destination Image	Tourist perceptions of a destination significantly influence economic (visitor expenditure), social, and environmental aspects.	5. Leadership 6. Effective communication 7. Value/Price 8. Service quality 9. Human resource 10. Location 11. Destination economy 12. Destination loyalty 13. Destination management 14. Destination image 15. Destination environment

4	Visitor Experience	Tourist interactions with local culinary and cultural practices positively impact satisfaction and loyalty.	16. Uniqueness experience 17. Dinning atmosphere 18. Services experience
5	Destination Marketing	Effective marketing strategies, including the use of social media, are crucial for attracting tourists and supporting sustainability.	19. Social media 20. Sales promotion

**Table 1. (continued)**

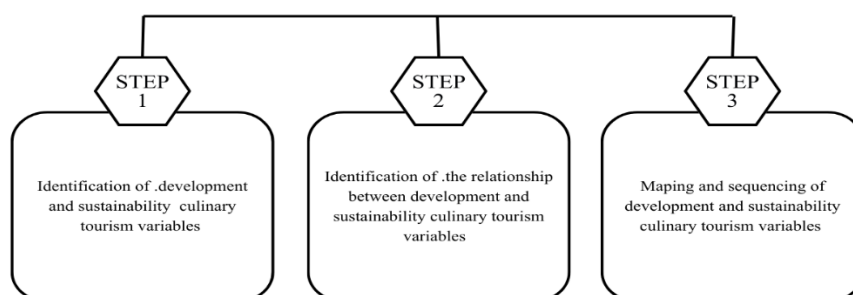
No	Aspect	Description	Variables
6	Core Food Products	The presence of traditional foods as a destination's cultural identity is crucial for attracting tourists and encouraging repeat visits.	21. Food culture 22. Food service 23. Food safety 24. Food authenticity 25. Food diversity 26. Food image 27. Food quality

Source: Culinary Tourism FGD, 2025

### 2.3 Data Analysis

Data analysis was carried out using the MICMAC (Cross-Impact Matrix Multiplication Applied to Classification) method developed by Godet (2000). MICMAC was employed as a prospective structural analysis tool to identify, map, and analyze direct and indirect influences among variables within a system. The method was commonly used to identify key variables and to support strategic decision-making through the analysis of influence–dependence structures.

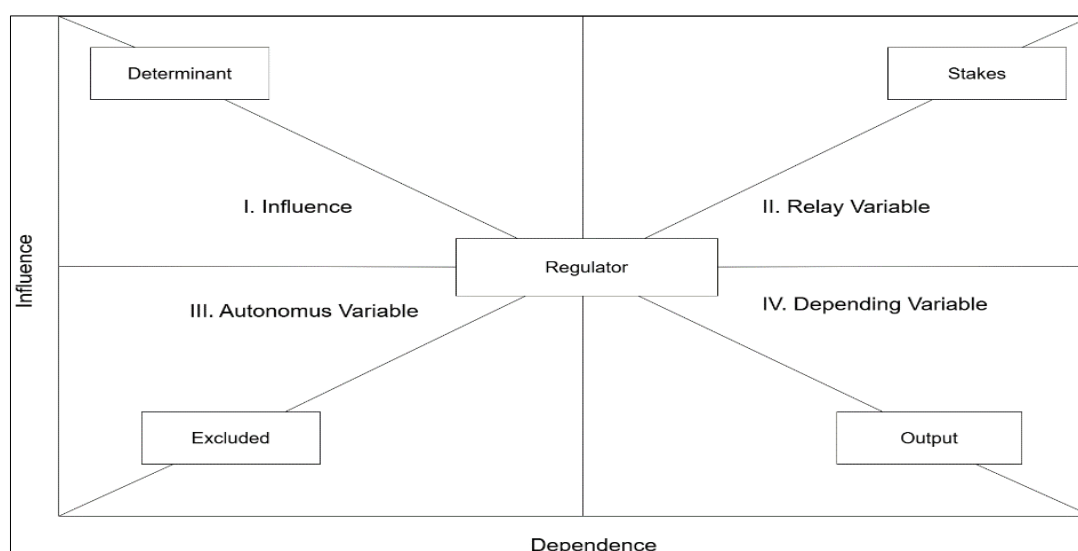
The MICMAC analysis was based on two main matrices: the Matrix of Direct Influences (MDI) and the Matrix of Indirect Influences (MII). These matrices were used to calculate and map each variable's driving power and dependence, thereby providing an overview of the system structure and the relative position of each variable. In general, the structural analysis process in MICMAC consisted of three main stages: identification of variables, construction and completion of influence matrices, and classification and interpretation of variables on the influence–dependence map (Godet et al., 2008; Ariyani & Fauzi, 2023).



**Figure 1. Structural Analysis Steps with MICMAC Method**

Source: Fauzi (2019)

MICMAC classified critical variables into four quadrants on the influence–dependence map. The first quadrant contained determinant (driving) variables, which had strong influence on many other variables but low dependence. The second quadrant, often referred to as the *stakes* quadrant, contained relay variables with both high influence and high dependence; variables in this group were structurally unstable because changes in them could propagate widely throughout the system. The third quadrant comprised autonomous variables, characterized by low influence and low dependence, whose role in system dynamics was relatively limited. The fourth quadrant contained output variables, which had high dependence but low influence on other variables. This classification enabled the identification of primary driving variables, highly dependent variables, and variables with the potential to generate long-term systemic effects.



**Figure 2. Influence–Dependence Map of MICMAC Variable Classification**

Source: Godet (1994)

In the tourism field, MICMAC was initially applied mainly in sustainability analysis and strategic planning in complex and uncertain environments (Fauzi, 2019; Moradi-Lakeh et al., 2024). Over time, the method was increasingly used to examine strategic variables in various tourism contexts, such as ecotourism development in reservoir area (Ariyani & Fauzi, 2019), sustainability planning for tourism village (Wijaya et al., 2020), and the impacts of tourism growth at the national level in Iran (Nematpour & Faraji, 2019). Laverde et al. (2023) applied MICMAC to analyze legal components in the tourism system, while Ilhami et al. (2024) used it for planning the development of sustainable scientific tourism in Indonesia. The present study was positioned to complement these applications by focusing specifically on culinary tourism, which had become an increasingly prominent topic in international discussions on destination development (Park & Widyanta, 2022).

After the main variables were identified (Table 1), the next step was to analyze the degree of direct influence among variables through the MDI. Influence assessments were carried out using the standard MICMAC scale: 0 (no influence), 1 (weak influence), 2 (moderate influence), 3 (strong influence), and P (potential future influence) (Godet et al., 2008). The resulting scores were summarized in the Appendix. In this study, the p-scale was not used, because the focus of the analysis was on existing conditions; the p-value was more appropriate for studies that explicitly aimed to capture potential influences that were not yet visible but were expected to emerge in the future, for example due to technological or policy changes.

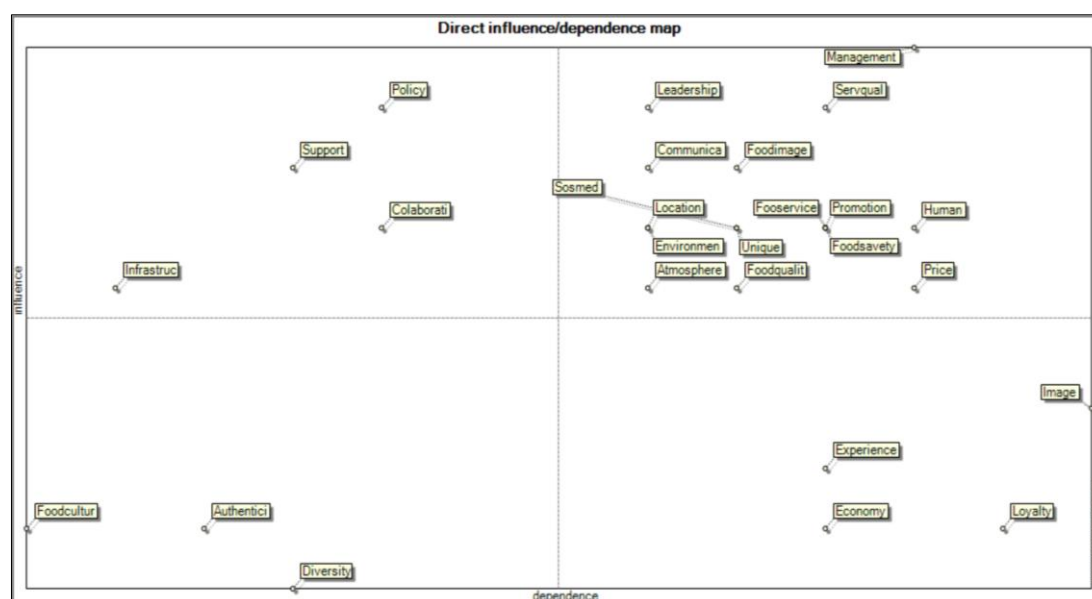
### **3. RESULTS AND DISCUSSIONS**

#### **3.1 Results**

##### **3.1.1 Analysis of Direct Influences among Variables**

Direct influence was defined as the immediate impact of one variable on another without intermediaries, as represented by scores in the influence matrix on a 0–3 scale. The analysis of direct influences among variables was carried out using the Matrix of Direct Influences (MDI) and the direct influence–dependence map generated by MICMAC. This map positioned each variable in the culinary tourism development system of Bogor City along two main dimensions, namely its level of influence on other variables and its level of dependence on other variables, and this positioning was then used as the basis for classifying variables into four quadrants. Based on the MDI, the classification and mapping of variables were presented in Figure 3.





**Figure 3. Map of Relationships and Direct Dependencies of Variables**

Source: MICMAC Culinary Results, 2025

Quadrant I (high influence, low dependence) contained four variables, namely local government policy (Policy), budget and resource support (Support), multi-stakeholder collaboration (Collaboration), and infrastructure (Infrastructure). These variables exerted strong influence on other variables while remaining relatively independent, and therefore needed to be treated as priorities for policy intervention. Changes in these determinant variables had the potential to spread across almost all aspects of culinary tourism development in Bogor City.

Government policy played a role in creating a conducive ecosystem through regulations and supporting programs, such as culinary festivals and training for MSME actors. Budget and resource support, including financial assistance and business facilitation, strengthened industrial capacity and enhanced the competitiveness of local businesses. Collaboration among businesses, government, communities, and media contributed to building an innovative culinary ecosystem, while adequate infrastructure—including transport access, public facilities, and comfortable dining spaces—improved accessibility and visitor comfort.

Quadrant II contained the relay variables, namely variables with both high influence and high dependence. In this quadrant, sixteen variables were located: Leadership, Environment, Location, Atmosphere, Communication, Food Image, Uniqueness, Social Media, Food Quality, Promotion, Food Safety, Food Service, Human Resources, Service Quality, Management, and Price. These variables functioned as connectors between determinant variables and outcome variables, were structurally unstable, and were sensitive to change: a shift in one variable could spread widely throughout the system, while their performance was strongly shaped by policy, support, collaboration, and infrastructure.

Visionary leadership, a safe and clean environment, strategic location, and a pleasant atmosphere strengthened the attractiveness of the culinary destination. Effective communication, food image, human resource and service quality, professional management, the use of social media, promotional strategies, and appropriate pricing together formed the value package perceived by visitors. Because of their interdependent nature, these relay variables needed to be managed in an integrated way, since the effectiveness of one variable strongly depended on the support of others; promotion, for example, was only likely to be effective if supported by adequate product and service quality.

Quadrant III grouped autonomous variables, characterized by low influence and low dependence. In this study, product diversity (Diversity), authenticity (Authenticity), and food culture (Food Culture) fell into this category. Structurally, these variables did not act as major levers in the MDI, either as strong drivers or as highly dependent variables, but they still functioned as identity enhancers and symbolic values that enriched the narrative of the culinary destination.

Quadrant IV contained the outcome variables, namely variables with high dependence but relatively low influence on other variables. The variables in this quadrant were Experience, Economy, Loyalty, and Image, which reflected the outcomes of the configuration of determinant variables (Quadrant I) and relay variables (Quadrant II). Tourist experience and destination image were strongly influenced by service quality, culinary uniqueness, and the use of social media, whereas loyalty and local economic impact emerged when the overall support system operated in a consistent and integrated way. These outcome variables could be interpreted as performance indicators for the development of culinary tourism in Bogor City, implying that policy interventions should first focus on strengthening variables in Quadrants I and II rather than only targeting the outcome variables.

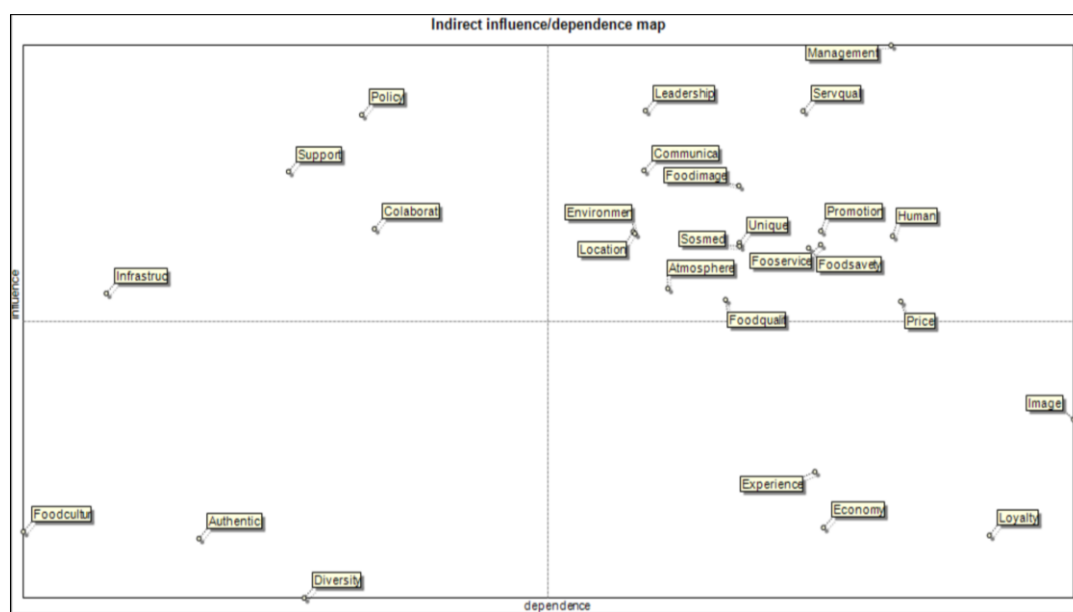
Overall, the mapping of direct influences showed that the successful development of culinary tourism in Bogor City required a holistic and integrated approach. This approach needed to ensure that determinant and relay variables were consistently managed. Under these conditions, the system could generate the expected experience, image, loyalty, and economic impacts.

### **3.1.2 Analysis of Indirect Influences among Variables**

The subsequent analysis examined indirect influences among variables using the Matrix of Indirect Influences (MII) and the indirect influence–dependence map generated by MICMAC. Indirect influence referred to the impact of one variable on another through one or more intermediary variables and was calculated through matrix iterations, thereby describing how influence diffused through the system in a chain-like manner. In contrast to the MDI, which captured only direct relationships, the MII incorporated cascading effects and showed how one variable affected others through intermediate pathways within the system.

By comparing variable positions on the direct and indirect influence–dependence maps, it was possible to identify variables that remained consistent as primary drivers, variables whose roles became stronger when indirect effects were considered, and variables that

primarily functioned as outcomes in the development of culinary tourism in Bogor City. Figure 4 presented the map of relationships and indirect dependencies among variables that resulted from this analysis.



**Figure 4. Map of Relationships and Indirect Dependencies of Variables**

Source: MICMAC Culinary Results, 2025

Based on the indirect influence–dependence map in Figure 4, Quadrant I (upper left: high influence, low dependence) continued to be dominated by four variables, namely Policy, Support, and Collaboration, while Infrastructure was positioned slightly lower but still on the left side of the map. This pattern indicated that, even when indirect influences were taken into account, policy, support, collaboration, and infrastructure still played the role of main system drivers. These findings reinforced the results of the direct influence analysis, confirming that the four variables were consistent strategic drivers in the development of culinary tourism in Bogor City.

Quadrant II contained the relay variables. Most of the remaining variables namely Leadership, Environment, Location, Atmosphere, Communication, Food Image, Uniqueness, Social Media, Food Quality, Promotion, Food Safety, Food Service, Human Resources, Service Quality, Management, and Price, remained in or near the upper-right quadrant. This indicated that these variables not only linked direct influences, but also served as transmission channels for indirect influences from policy, support, collaboration, and infrastructure to the outcome variables. Consequently, strengthening the bundle of “leadership–management–human resources–product/service quality–promotion–environment, location, and atmosphere” was crucial for translating policy into tangible performance outcomes in culinary tourism.

Quadrant III continued to be occupied by the autonomous variables Food Culture, Authenticity, and Diversity, which were located in the lower-left area with low influence and low dependence. Even after indirect influences were considered, these three variables did not transform into drivers or relay variables. From a structural influence perspective, these cultural identity variables functioned more as symbolic and narrative elements that reinforced destination character, but they did not operate as primary structural levers in the short term.

Quadrant IV contained the outcome variables, namely Experience, Economy, Loyalty, and Image, which remained in the lower-right area with high dependence and low influence. The stability of these positions confirmed that the four variables could be treated as system outcome indicators in both direct and indirect influence analyses. Structurally, the performance of the culinary tourism development system in Bogor City was driven primarily by determinant variables in Quadrant I and the network of relay variables in Quadrant II, while variables in Quadrant IV reflected the final level of success of the overall system configuration.

### 3.1.4 Displacement Map

In the MICMAC framework, the comparison between the direct and indirect influence–dependence maps was used to identify variables whose roles remained stable and those that changed when cascading effects in the system were taken into account. In this study, the displacement map showed the extent to which variable positions shifted when moving from direct influence (MDI) to indirect influence (MII), thereby allowing the identification of variables that experienced significant movement and those that remained relatively stable.

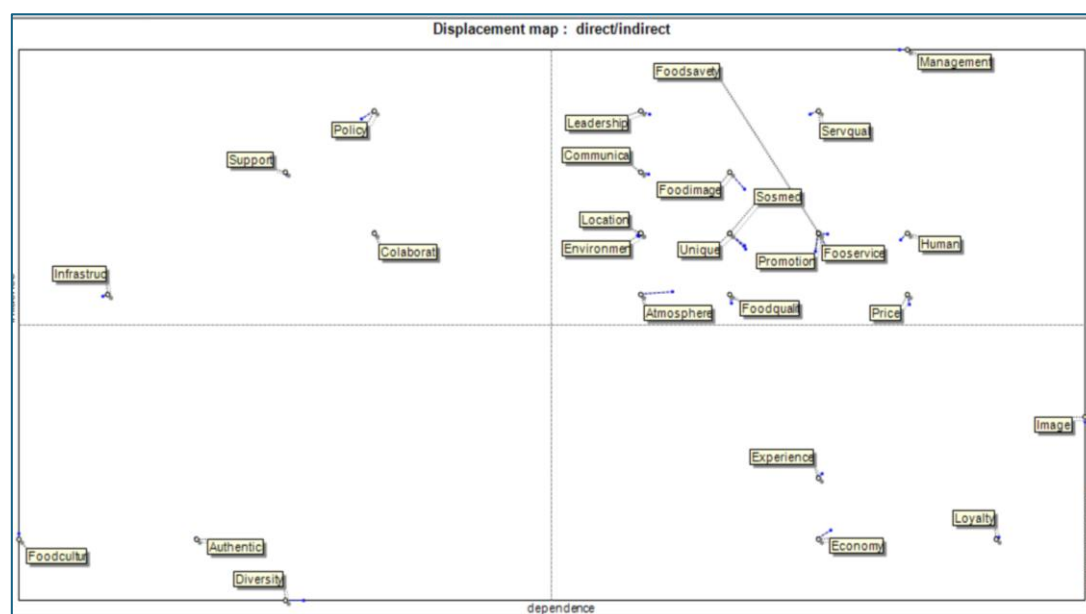


Figure 5. Displacement Map

Source: MICMAC Culinary Results, 2025

The displacement map comparing variable positions between the MDI and MII indicated that most variables did not undergo meaningful quadrant shifts. Policy, Support, Collaboration, and Infrastructure continued to appear as stable drivers, while the group of relay variables remained concentrated in the upper-right quadrant and consistently functioned as the main connectors between determinant and outcome variables. Conversely, Food Culture, Authenticity, and Diversity remained in autonomous positions, and Experience, Economy, Loyalty, and Image retained their roles as dependent variables. This pattern of relatively small shifts showed that the structure of the culinary tourism development system in Bogor City was fairly robust, with a driver–relay–outcome configuration that remained stable even when indirect influences were incorporated.

### 3.1.5 Identifying Key Variables

Based on the results of the direct (MDI) and indirect (MII) influence analyses, variables located in Quadrants I and II of the influence–dependence map were identified as key variables within the culinary tourism development system of Bogor City. Variables in Quadrant I acted as primary drivers, characterized by high influence and low dependence, whereas variables in Quadrant II functioned as relay or stakes variables, with both high influence and high dependence. Together, these two groups of variables formed the core of the system structure, since changes in them had the potential to generate wide-ranging impacts on the overall performance of the culinary destination.

In detail, the 20 key variables identified in this study were presented in Table 2. Policy, Support, Collaboration, and Infrastructure were primary drivers that provided the foundation for strategic interventions, while Leadership, Environment, Location, Atmosphere, Communication, Food Image, Uniqueness, Social Media, Food Quality, Promotion, Food Safety, Food Service, Human Resources, Service Quality, Management, and Price operated as relay variables that translated the influence of determinant variables into tangible changes in tourist experience, destination image, and local economic performance.

**Tabel 2. Key Strategic Variables For Culinary Tourism Development In Bogor City**

No	Variabel	No	Variabel
1	Policy	11	Uniqueness
2	Support	12	Social Media
3	Collaboration	13	Food Quality
4	Infrastructure	14	Promotion
5	Leadership	15	Food Safety
6	Environment	16	Food Service
7	Location	17	Human Resources
8	Atmosphere	18	Service Quality
9	Communication	19	Management

10	Food Image	20	Price
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### 3.2 Discussions

The structural analysis results indicate that the development of culinary tourism is the outcome of synergy among a set of key variables that form the core of the system, rather than a random process. Government policy, budget and resource support, multi-stakeholder collaboration, and infrastructure function as determinant variables that drive other variables and provide the main foundation for development strategies. Government policy reflects the role of the state in facilitating, encouraging investment, and allocating budgets, and is therefore crucial in creating space for the emergence of competitive culinary destinations; this is consistent with Karim & Chi (2010), who emphasize the importance of effective policy for culinary tourism competitiveness.

Adequate infrastructure, which covers accessibility to culinary destinations and the availability of amenities required by visitors, strongly shapes the quality of tourism experiences. Kivela & Crotts (2006) show that accessibility, facilities, and infrastructure quality support overall tourism experiences and encourage repeat visitation, while Wondirad et al. (2021) and Björk & Kauppinen-Räsänen (2016) underline that policy and infrastructure constitute the foundation for sustainable culinary destination development. Empirical work in Indonesia by Wijaya et al. (2016) also finds that simultaneous strengthening of policy and infrastructure contributes to the success of regional culinary tourism.

A growing body of studies reinforces the centrality of government and multi-stakeholder collaboration in tourism development. Anika et al. (2020) in Bangladesh argue that tourism development depends heavily on collaborative relationships among actors and local stakeholders, whereas Nugraha et al. (2024) in Klungkung Regency highlight the significance of government participation in realizing sustainable tourism. Nur et al. (2023) conceptualize government roles in regulator, dynamizer, and facilitator, while Fufurida et al. (2020) and Ariyani et al. (2023) show that local government roles, improvements in facilities and infrastructure, and multi-stakeholder collaboration positively affect tourism growth and local economic outcomes; under this framework, adequate budget and resource support becomes a prerequisite for effective culinary tourism governance.

On this determinant foundation, the MICMAC analysis identifies a group of relay variables—Leadership, Environment, Location, Atmosphere, Communication, Food Image, Uniqueness, Social Media, Food Quality, Promotion, Food Safety, Food Service, Human Resources, Service Quality, Management, and Price, with simultaneously high influence and high dependence. These variables translate the effects of policy, support, collaboration, and infrastructure into concrete experiences at the destination level, so their performance is highly contingent on the consistency and quality of interventions targeting determinant variables. Integrated management of the bundle “leadership–management–human resources–product/service quality–promotion–environment, location, and atmosphere” thus becomes critical for maintaining system stability and enhancing Bogor’s attractiveness as a culinary destination; Mafruhah et al. (2018) demonstrate that local community

empowerment and the development of tourism services, including culinary components, have direct impacts on economic resilience, growth, and destination competitiveness.

By contrast, Food Culture, Authenticity, and Diversity emerge as autonomous variables with low influence and low dependence in both direct and indirect influence structures. Structurally, these variables do not operate as primary levers, but rather as symbolic and narrative elements that enrich destination experience and identity; this is in line with Lacap (2019) who show that local culinary authenticity and cultural richness positively affect destination attractiveness and tourist satisfaction, even if they do not always function as main structural drivers. Meanwhile, dependent variables such as tourist experience, destination image, loyalty, and economic impact represent the outcomes of the configuration of determinant and relay variables and can therefore be interpreted as performance indicators for the culinary tourism development system.

These findings imply that policymakers and industry actors need to focus their strategies on strengthening determinant variables and managing relay variables synergistically, while using cultural identity and culinary diversity as enhancers of destination identity and differentiation. Such an approach requires holistic and comprehensive strategies in which the synergy among government policy, infrastructure, human resource quality, product innovation, and the use of digital technologies—including promotion and social media—is maintained over time to enhance competitiveness, ensure sustainability, and maximize the economic and social impacts of culinary tourism development in Bogor City.

#### 4. CONCLUSIONS

The culinary tourism development system in Bogor City was supported by four determinant factors, namely government policy, budget and resource support, multi-stakeholder collaboration, and infrastructure. These variables formed the main foundation that strengthened destination attractiveness, stimulated local economic growth, and supported more directed tourism management, so they were appropriately positioned as the primary focus of policies and development strategies to ensure that Bogor's culinary potential developed sustainably. The MICMAC analysis further showed that these determinants consistently acted as structural drivers of the system.

The MICMAC results also indicated that the relay variables, namely Leadership, Environment, Location, Atmosphere, Communication, Food Image, Uniqueness, Social Media, Food Quality, Promotion, Food Safety, Food Service, Human Resources, Service Quality, Management, and Price, had high levels of both influence and dependence within the system. Integrated management and cross-sectoral collaboration around these variables were found to be crucial for maintaining system stability and enhancing culinary appeal at national and international scales, while Food Culture, Authenticity, and Diversity contributed as reinforcers of identity and experiential value, and outcome variables such as Experience, Image, Loyalty, and Economy reflected the overall effectiveness of managing determinant and relay factors.

Therefore, the planning and implementation of culinary tourism development in Bogor City needed to focus on strengthening determinant factors and integrating the management of relay variables in order to achieve strong sustainability and competitiveness. Synergy among stakeholders and continuous innovation were also required so that culinary tourism could develop as a flagship destination that made a significant contribution to the city's economy and image.

This study provided practical implications for managers and policymakers in the form of recommendations to optimize the role of government, strengthen infrastructure, allocate budgets more strategically, and use local culinary identity and diversity as the basis for destination differentiation. A focused emphasis on the main variables had the potential to enhance the competitiveness and sustainability of culinary tourism while contributing to community economic development, although the analysis remained limited to one urban case and to an MICMAC-based structural approach. Future research can expand this work by comparing different cities, integrating additional quantitative performance indicators, and combining structural analysis with other system-based or behavioral methods to deepen the understanding of culinary tourism dynamics in Indonesia and beyond.

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