




Designing an Interpretive Structural Model of Factors Affecting the Development of Food Ecotourism: A Case Study of Qeshm Island

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ABSTRACT

This study investigates the interpretive structural model of factors affecting the development of food ecotourism on Qeshm Island. The research method is descriptive-survey in nature and applied in terms of purpose. The research population consisted of tourism managers and experts, and a sample of 30 participants was selected through convenience sampling. The data collection instrument was a questionnaire comprising 27 items and covering the dimensions of social, cultural, economic, environmental, political and structural, economic and marketability, educational and human resource development, technological and innovation, and health and quality of life factors. Data analysis was conducted using the Interpretive Structural Modeling (ISM) approach. The findings indicate that food ecotourism activities are among the key factors contributing to the improvement of community health and quality of life, which were positioned at the first level of the model. The importance of healthy nutrition and organic products in food ecotourism was identified as one of the influential factors in its development at the second level. In addition, compliance with health and hygiene standards in food ecotourism activities was recognized as another influential factor in the development of this sector and was placed at the third level. Environmental impacts and the sustainability of food ecotourism activities, as an independent variable, play a highly significant role in the development of this sector. This study clearly demonstrates that food ecotourism not only contributes to enhancing individuals' quality of life and public health, but also supports environmental conservation and economic sustainability.

Keywords: *Development, Food Ecotourism, Tourism, Qeshm, Interpretive Structural Modeling (ISM)*

1. Introduction

Food tourism has emerged as one of the most dynamic and rapidly expanding sectors within the global tourism industry due to its capacity to integrate culture, heritage, sustainability, local identity, and economic development. In recent decades, tourism researchers and policymakers have increasingly recognized that food is no longer merely a supplementary component of the tourist experience but rather a central attraction capable of shaping destination image, tourist satisfaction, and revisit intention (Okumuş et al., 2020; Pavlidis & Μαρκαντωνάτου, 2020). Gastronomic experiences enable tourists to engage directly with local traditions, agricultural systems, culinary heritage, and cultural practices, thereby transforming food into a strategic resource for destination competitiveness and sustainable tourism development (Dursun, 2024; Mohanty et al., 2020). Within this framework, food ecotourism has gained substantial attention as a specialized branch of tourism that combines gastronomic experiences with ecological sustainability, environmental conservation, local participation, and responsible tourism practices.

Food ecotourism reflects a multidimensional approach in which tourists not only consume local foods but also participate in environmentally responsible activities associated with local agricultural production, indigenous food systems, organic products, and sustainable lifestyles. This form of tourism is particularly important in destinations possessing rich cultural and environmental resources because it contributes simultaneously to economic diversification, preservation of local identity, and ecological sustainability (Rana & Bisht, 2023; Sulaiman et al., 2023). The increasing global demand for authentic and sustainable tourism experiences has intensified the significance of food ecotourism as a strategic development tool for local communities and tourism destinations. In many developing regions, food ecotourism has become a mechanism for empowering local populations, revitalizing traditional food systems, creating employment opportunities, and strengthening regional branding (Garcia Henche, 2018; Juliana et al., 2024).

The relationship between gastronomy and tourism has evolved significantly in response to changing tourist expectations and global tourism trends. Modern tourists increasingly seek experiential travel opportunities that allow them to interact with local culture, traditional cuisine, and community-based activities. Consequently, culinary traditions, local products, indigenous agricultural systems,

and food-related cultural practices have become important components of tourism destination attractiveness (Kim, 2025; Magdy, 2024). Studies have shown that memorable gastronomic experiences positively influence tourist satisfaction, destination loyalty, and revisit intentions, thereby contributing to the long-term sustainability of tourism destinations (Durmaz et al., 2022; Listiani et al., 2026). In this regard, destinations capable of integrating authentic food experiences with environmental sustainability and cultural preservation are more likely to achieve competitive advantages within the global tourism market.

One of the most important dimensions of food ecotourism is its contribution to sustainable local development. Sustainable tourism emphasizes balancing economic growth, environmental protection, and social equity. Food ecotourism aligns closely with these principles because it promotes local food systems, sustainable agricultural practices, environmental awareness, and community participation (Rana & Bisht, 2023; Sulaiman et al., 2023). By encouraging the consumption of local and organic products, food ecotourism can reduce environmental pressures associated with mass food production and long-distance transportation while simultaneously supporting local farmers and small-scale producers. Moreover, the integration of ecological values into tourism experiences enhances tourists' awareness of environmental sustainability and responsible consumption practices.

The environmental dimension of food ecotourism has become increasingly important in light of global concerns regarding climate change, resource depletion, and ecological degradation. Sustainable use of natural resources, protection of biodiversity, reduction of food waste, and promotion of environmentally friendly agricultural systems are among the key principles of food ecotourism (Kuang et al., 2024; TingYue et al., 2024). Tourists are becoming more conscious of environmental issues and increasingly prefer destinations that demonstrate commitment to sustainability, organic food production, and ecological responsibility. Transparent packaging, environmentally friendly products, and sustainable food systems positively influence tourists' perceptions and purchasing behaviors, particularly among environmentally conscious travelers (Kuang et al., 2024; TingYue et al., 2024). Consequently, integrating sustainability into food tourism development strategies can significantly improve destination attractiveness and market competitiveness.

Health and nutrition considerations have also become central factors in the development of food tourism and food ecotourism. The growing global emphasis on healthy lifestyles, organic nutrition, and food safety has altered tourist preferences and consumption patterns. Tourists increasingly value healthy, organic, and locally sourced foods that contribute to physical well-being and overall quality of life (Kaya, 2023; Salisu & Waziri, 2024). Health-conscious tourists are more likely to seek destinations offering organic products, healthy dietary options, and hygienic food services. Research indicates that perceptions of food quality, healthiness, and safety significantly influence tourist satisfaction and destination image (Pilis et al., 2022; Salisu & Waziri, 2024). Therefore, compliance with health and hygiene standards is essential for the successful development of food ecotourism destinations.

In addition to health and sustainability dimensions, digital transformation has profoundly reshaped the tourism and hospitality industry. Digital marketing, online communication, social media platforms, and technological innovations now play a critical role in promoting tourism destinations and influencing tourist behavior (Bu et al., 2021; Etale & Uranta, 2022). The development of food tourism increasingly depends on digital content marketing, electronic word-of-mouth communication, and social media engagement, all of which enhance destination visibility and tourist interaction. Digital communication tools enable tourism businesses and local communities to market local food products, culinary experiences, and ecotourism activities to broader audiences while simultaneously strengthening destination branding (Ebrahimi et al., 2023; Garcia Henche, 2018). The use of innovative digital marketing strategies has been shown to positively influence food tourism development by improving tourist awareness, destination attractiveness, and market accessibility.

Technological advancements have further facilitated the integration of food tourism with smart tourism systems and data-driven management approaches. Digital platforms, online reservation systems, big data analytics, and social media marketing contribute significantly to improving tourism experiences and destination management efficiency (Bu et al., 2021; Ebrahimi et al., 2023). In the context of food ecotourism, integrating data and information technologies can enhance operational processes, improve communication with tourists, and support sustainable resource management. Furthermore, technological innovations contribute to more effective promotion of local products, food festivals, culinary events, and ecotourism experiences, thereby

increasing the visibility and competitiveness of destinations in international tourism markets.

The socio-cultural dimension of food ecotourism is equally significant because local cuisine reflects cultural identity, historical heritage, and community values. Traditional food practices, indigenous recipes, local agricultural knowledge, and culinary rituals represent valuable cultural assets capable of differentiating tourism destinations from competitors (Mohanty et al., 2020; Stalmirska, 2020). Food ecotourism contributes to preserving cultural heritage by encouraging communities to maintain traditional cooking methods, local food production systems, and cultural festivals associated with gastronomy. Moreover, interactions between tourists and local communities foster cultural exchange, mutual understanding, and social cohesion, thereby strengthening the social sustainability of tourism development.

Community participation is considered a critical success factor in sustainable tourism and food ecotourism development. Active involvement of local communities ensures that tourism benefits are distributed equitably and that local residents participate in decision-making processes related to tourism planning and management (Rana & Bisht, 2023; Sulaiman et al., 2023). Community-based tourism approaches emphasize local empowerment, social inclusion, and preservation of indigenous knowledge systems. In food ecotourism, local communities play a central role in producing local foods, organizing cultural events, managing ecotourism activities, and transmitting culinary traditions to visitors. Consequently, strengthening cooperation among local stakeholders, indigenous communities, tourism organizations, and government institutions is essential for achieving sustainable tourism outcomes.

Economic benefits represent another major motivation for promoting food ecotourism. Tourism-related food activities can generate employment opportunities, increase local incomes, stimulate small business development, and diversify regional economies (Bagheri et al., 2023; Bayat, 2023). Local food markets, traditional restaurants, culinary festivals, and agri-tourism activities create economic linkages between tourism and local agricultural systems. Moreover, food ecotourism encourages entrepreneurship among local populations, particularly rural youth and women, thereby contributing to poverty reduction and regional economic resilience (Rana & Bisht, 2023). By strengthening local supply chains and promoting local products, food ecotourism can reduce economic leakage and

increase the retention of tourism revenues within local communities.

Marketing and destination branding are fundamental components of successful food tourism development. Gastronomy has become an important branding tool capable of enhancing destination image and differentiating tourism products in competitive markets (Jalalian et al., 2019; Magdy, 2024). Creative food tourism experiences contribute to building strong destination brands by creating memorable emotional and sensory experiences for tourists. Culinary identity, local food authenticity, and food-related cultural narratives enhance tourists' perceptions of destination uniqueness and attractiveness. Effective tourism marketing strategies must therefore integrate gastronomic resources, ecological sustainability, cultural heritage, and digital communication tools to strengthen destination competitiveness.

Human resource development and educational strategies also play a critical role in food ecotourism development. Tourism professionals, local entrepreneurs, food producers, and community members require adequate technical skills, managerial competencies, and environmental awareness to successfully implement sustainable tourism initiatives (Ishmael-Robertson, 2018). Training programs related to food safety, customer service, sustainable resource management, digital marketing, and tourism entrepreneurship can significantly improve the quality of tourism services and enhance destination competitiveness. Furthermore, educational initiatives contribute to increasing local awareness regarding the economic, cultural, and environmental benefits of food ecotourism.

Despite the growing importance of food ecotourism, many destinations continue to face significant challenges in developing integrated and sustainable tourism systems. Weak policy frameworks, limited coordination among stakeholders, insufficient technological infrastructure, inadequate marketing strategies, and lack of community participation can hinder tourism development processes (Bagheri et al., 2023; Bayat, 2023). In addition, environmental degradation, over-commercialization, and loss of cultural authenticity may negatively affect the sustainability of food tourism destinations. Consequently, there is a growing need for comprehensive analytical models capable of identifying the complex relationships among the multiple factors influencing food ecotourism development.

Interpretive Structural Modeling (ISM) provides a systematic approach for analyzing complex systems and identifying hierarchical relationships among variables. ISM

enables researchers to determine the driving and dependent factors within multidimensional systems and to develop structured frameworks for strategic planning and decision-making. Given the multidimensional nature of food ecotourism involving social, cultural, environmental, economic, technological, and political dimensions, ISM represents an appropriate methodology for examining the structural relationships among the factors influencing food ecotourism development.

Qeshm Island possesses substantial potential for food ecotourism development due to its unique ecological environment, rich culinary heritage, indigenous food culture, coastal resources, traditional markets, and diverse local products. However, despite these capacities, limited research has comprehensively examined the structural relationships among the factors affecting food ecotourism development in this region. Therefore, the present study aims to design an interpretive structural model of the factors affecting the development of food ecotourism on Qeshm Island.

2. Methods and Materials

The present study was conducted using a descriptive-survey research design with an applied orientation. The research methodology consisted of two complementary sections. The first section employed a survey approach in which a structured questionnaire was used as the principal instrument for collecting empirical data related to the factors affecting the development of food ecotourism. The second section was based on a descriptive method focusing on the analysis and interpretation of existing documents, theoretical foundations, and expert opinions associated with food ecotourism development. This combined methodological framework enabled the researchers to obtain both conceptual and empirical insights into the structural relationships among the variables influencing food ecotourism development on Qeshm Island.

The statistical population of the study consisted of tourism managers, tourism experts, and specialists familiar with ecotourism and food tourism activities in the region. Due to the specialized nature of the subject and the requirement for expert judgment in interpretive structural modeling, a non-probability convenience sampling method was employed. A total of 30 experts and professionals were selected as the final sample of the study. The selected participants possessed sufficient academic background, professional experience, and practical knowledge regarding tourism development, local food culture, environmental

sustainability, and tourism management. The use of expert participants was considered appropriate because the Interpretive Structural Modeling (ISM) approach relies heavily on expert evaluations and the identification of contextual relationships among variables.

Data collection in this study was conducted through both library-based investigations and field research methods. In the library study phase, theoretical foundations, conceptual definitions, and research dimensions related to food ecotourism development were identified through the review of scientific books, academic articles, university library resources, internet search engines, and various national and international information databases. This phase contributed to the development of the conceptual framework of the study and facilitated the extraction of the primary variables associated with food ecotourism development.

In the field study phase, a researcher-developed questionnaire was employed as the primary data collection instrument. The questionnaire consisted of 27 items designed to evaluate the major dimensions influencing the development of food ecotourism. The questionnaire dimensions included social factors, cultural factors, economic factors, environmental factors, political and structural factors, economic and marketability factors, educational and human resource development factors, technological and innovation factors, and health and quality-of-life factors. The items were formulated based on the literature review and expert opinions to ensure adequate coverage of the research variables. The questionnaire was distributed among the selected tourism experts and managers, and respondents were asked to evaluate the relationships and significance of the identified factors in the development of food ecotourism activities.

The collected data were analyzed using the Interpretive Structural Modeling (ISM) approach. ISM is a comprehensive and exploratory methodology that provides a systematic framework for identifying, analyzing, and interpreting complex relationships among variables within a

multifaceted system. This method is particularly useful in management and tourism studies because it enables researchers to classify variables according to their driving power and dependence relationships and to determine the hierarchical structure among influential factors.

The implementation process of ISM in this study involved several sequential stages. Initially, a Structural Self-Interaction Matrix (SSIM) was developed based on expert judgments regarding the contextual relationships among the identified variables. Subsequently, the initial reachability matrix was constructed and transformed into the final reachability matrix through the incorporation of transitivity relationships. In the next stage, the variables were leveled according to their reachability and antecedent sets to determine the hierarchical order of influence among factors. Finally, a driving power-dependence diagram was developed to classify the variables based on their influence and dependence characteristics. Through this analytical process, the study identified the most influential and dependent factors affecting the development of food ecotourism and provided a structural interpretation of the interrelationships among the variables.

3. Findings and Results

The demographic findings showed that among the 30 participants, 13 experts were aged 30–40 years (43.3%), 11 were aged 40–50 years (36.7%), and 6 were aged 50–60 years (20.0%). In terms of gender, the sample was equally distributed, with 15 men (50.0%) and 15 women (50.0%). Regarding marital status, 9 participants were single (30.0%) and 21 were married (70.0%). In terms of educational level, 6 participants held a bachelor’s degree (20.0%) and 24 held a master’s degree (80.0%). With respect to work experience, 1 respondent did not answer this item (3.3%), 7 had 5–10 years of experience (23.3%), 9 had 11–15 years (30.0%), 5 had 16–20 years (16.7%), and 8 had 21 years or more of work experience (26.7%).

Table 1

Abbreviations of Factors Affecting the Development of Food Ecotourism

Factor	Code	Factor	Code
Role of the local community in the development of food ecotourism	V1	Effect of government policies on food ecotourism development and promotional actions	V15
Cooperation and communication with local people and indigenous communities	V2	Market research and future demand assessment for food ecotourism experiences	V16
Enhancing the awareness and knowledge of the local community about food ecotourism	V3	Improving the quality and diversity of food ecotourism products and services	V17

Preserving and promoting local culture and arts	V4	Establishing relationships with economic and commercial enterprises to support food ecotourism	V18
Promoting local climate-related capacities and local products	V5	Enhancing education and awareness regarding food ecotourism and local products	V19
Attracting tourists to local and cultural experiences	V6	Motivating and promoting the skills and technical knowledge required for food ecotourism	V20
Creating markets and competition for local products	V7	Up-to-date educational strategies for developing food ecotourism	V21
Economic development of local communities through food ecotourism	V8	Using modern technologies in food ecotourism development and advertising	V22
Increasing income and employment through food ecotourism activities	V9	Integrating data and information to improve food ecotourism processes	V23
Protecting and conserving the environment and natural resources	V10	Digital communication and the Internet as tools for food ecotourism development	V24
Sustainable use of natural resources in food ecotourism activities	V11	Compliance with health and hygiene standards in food ecotourism activities	V25
Environmental impact and sustainability of food ecotourism activities	V12	Importance of healthy nutrition and organic products in food ecotourism	V26
Role and effect of local policies and regulations in food ecotourism development	V13	Effect of food ecotourism activities on improving quality of life and community health	V27
Need to implement changes and formulate supportive policies for food ecotourism development	V14		

In the inferential section, Interpretive Structural Modeling (ISM) was applied to identify the hierarchical structure of the factors affecting food ecotourism development. In the first step, the Structural Self-Interaction Matrix (SSIM) was formed based on expert judgments. The questionnaire used for ISM was designed as a matrix in

which the variables under study were placed in rows and columns. Pairwise relationships among variables were determined using the conceptual symbols presented in Table 2. The final SSIM was developed based on the aggregation of expert opinions and the majority rule.

Table 2

Conceptual Relationships Used in Forming the Structural Self-Interaction Matrix

Symbol	Meaning
V	Variable i influences variable j.
A	Variable j influences variable i.
X	There is a reciprocal relationship between variables i and j.
O	There is no relationship between variables i and j.

In the second step, the SSIM symbols were converted into binary values to construct the initial reachability matrix. Accordingly, if the SSIM cell contained V, the corresponding cell in the reachability matrix received 1 and its symmetric cell received 0. If the SSIM cell contained A, the corresponding cell received 0 and its symmetric cell received 1. If the SSIM cell contained X, both cells received 1, and if the SSIM cell contained O, both cells received 0. This transformation produced the initial reachability matrix and provided the basis for examining direct relationships among the variables.

In the third step, transitivity was applied to obtain the final reachability matrix. In ISM, transitivity means that if variable A leads to variable B and variable B leads to variable C, then variable A should also be considered as leading to variable C. Therefore, after controlling secondary relationships, the corrected reachability matrix was obtained. Table 3 presents the driving power and dependence values extracted from the corrected reachability matrix.

Table 3

Driving Power and Dependence Based on the Corrected Reachability Matrix

Code	Driving Power	Dependence
V1	26	0
V2	25	1
V3	24	2
V4	23	3
V5	21	4
V6	21	4
V7	20	6
V8	19	7
V9	18	8
V10	16	9
V11	15	9
V12	15	16
V13	11	15
V14	15	13
V15	14	14
V16	11	15
V17	11	17
V18	10	17
V19	8	19
V20	7	19
V21	12	20
V22	5	19
V23	3	22
V24	3	22
V25	2	24
V26	1	25
V27	0	26

In the fourth step, the levels of the variables were determined. For each variable, the reachability set, including the variable itself and the variables influenced by it, and the antecedent set, including the variable itself and the variables influencing it, were extracted. The intersection of these two

sets was then calculated. Variables for which the intersection set was equal to the reachability set were placed at the first level. After identifying the first-level variables, they were removed, and the process continued until all variables were leveled. The results of this stage are presented in Table 4.

Table 4

Leveling of Sustainable Indicators

Row	Indicator(s)	Level	Row	Indicator(s)	Level
1	V27	Level 1	12	V14	Level 12
2	V26	Level 2	13	V10, V11	Level 13
3	V25	Level 3	14	V9	Level 14
4	V23, V24	Level 4	15	V8	Level 15
5	V21, V22	Level 5	16	V7	Level 16
6	V20	Level 6	17	V5, V6	Level 17
7	V19	Level 7	18	V4	Level 18
8	V18	Level 8	19	V3	Level 19
9	V17	Level 9	20	V2	Level 20
10	V13, V16	Level 10	21	V1	Level 21
11	V12, V15	Level 11			

The results show that V27, namely the effect of food ecotourism activities on improving quality of life and community health, was positioned at the first level and

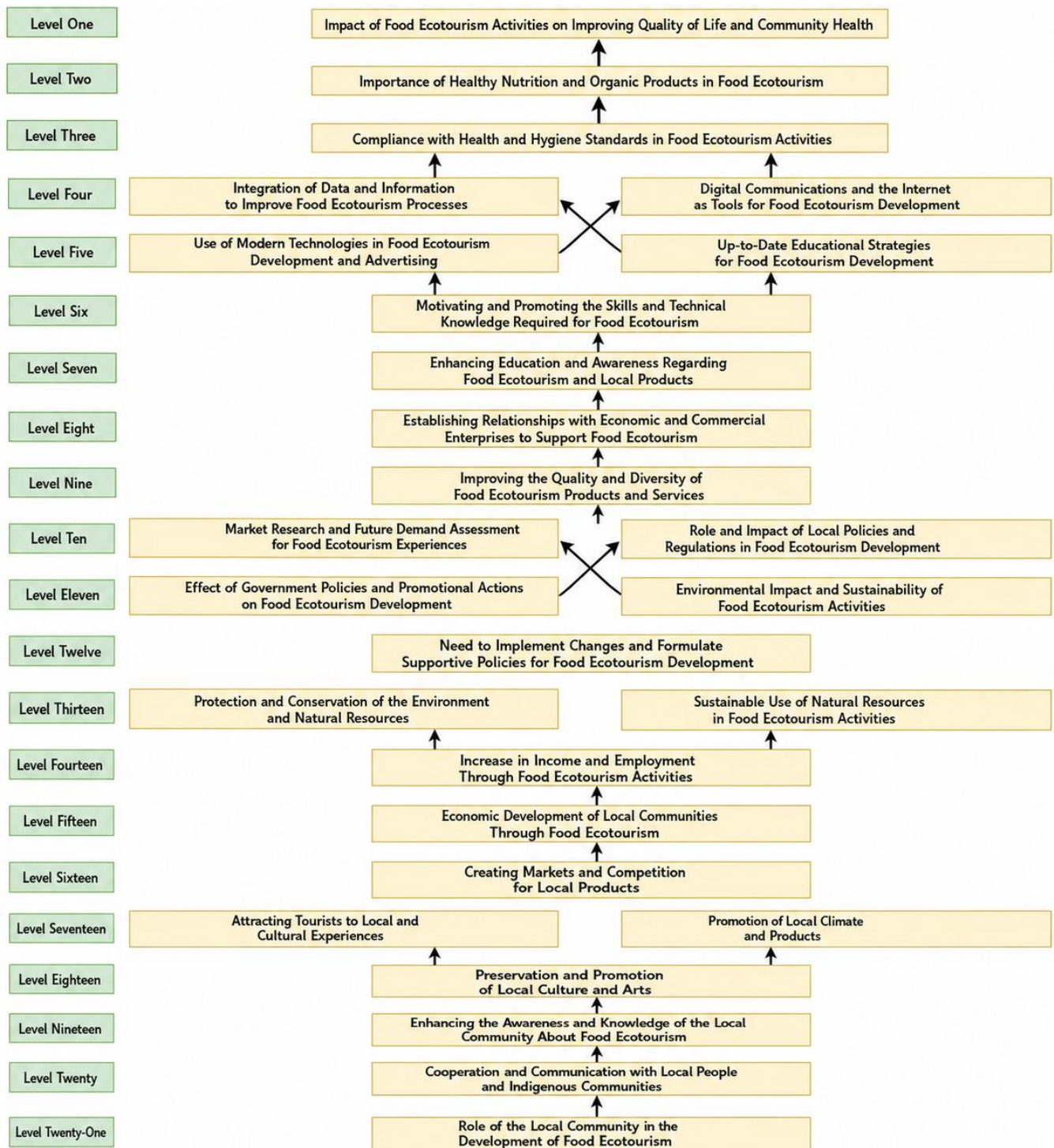
therefore had the highest dependence in the model. V26, referring to the importance of healthy nutrition and organic products in food ecotourism, was placed at the second level.

V25, referring to compliance with health and hygiene standards in food ecotourism activities, was placed at the third level. At the deepest level of the model, V1, namely the

role of the local community in the development of food ecotourism, was identified as one of the most fundamental driving variables.

Figure 1

Interpretive Structural Model of Factors Affecting the Development of Food Ecotourism



In the final step, the relationships among variables were structured based on the final reachability matrix and the

leveling results. The abbreviated codes were then replaced with the main research criteria to form the final ISM model.

In addition, MICMAC analysis was used to classify the variables according to driving power and dependence. In this analysis, driving power was placed on the vertical axis,

while dependence was placed on the horizontal axis. The variables were classified into autonomous, dependent, linkage, and independent categories.

Table 5

MICMAC-Based Driving Power and Dependence of Factors Affecting Food Ecotourism Development

Code	Dependence	Driving Power
V1	26	26
V2	26	26
V3	26	26
V4	26	26
V5	26	25
V6	26	26
V7	26	26
V8	26	26
V9	26	25
V10	25	26
V11	26	26
V12	26	26
V13	26	25
V14	25	26
V15	26	25
V16	23	26
V17	25	25
V18	26	25
V19	25	25
V20	25	26
V21	25	24
V22	26	26
V23	26	24
V24	26	26
V25	25	26
V26	25	26
V27	26	26

Based on the MICMAC analysis, autonomous variables are those with weak driving power and weak dependence and are relatively disconnected from the system because of their limited relationships with other variables. In the present model, government policies related to the development of food ecotourism and promotional actions were interpreted within this category.

Dependent variables are those with low driving power and high dependence. These included the role and effect of local policies and regulations in food ecotourism development (V13), market research and future demand assessment for food ecotourism experiences (V16), improving the quality and diversity of food ecotourism products and services (V17), establishing relationships with economic and commercial enterprises to support food ecotourism (V18), enhancing education and awareness regarding food ecotourism and local products (V19), motivating and promoting the skills and technical

knowledge required for food ecotourism (V20), up-to-date educational strategies for developing food ecotourism (V21), using modern technologies in food ecotourism development and advertising (V22), integrating data and information to improve food ecotourism processes (V23), digital communication and the Internet as tools for food ecotourism development (V24), compliance with health and hygiene standards in food ecotourism activities (V25), the importance of healthy nutrition and organic products in food ecotourism (V26), and the effect of food ecotourism activities on improving quality of life and community health (V27).

Linkage variables are unstable variables with both high driving power and high dependence. Any change in these variables can affect the entire system and can also be affected by other variables. These included the role of the local community in the development of food ecotourism (V1), cooperation and communication with local people and

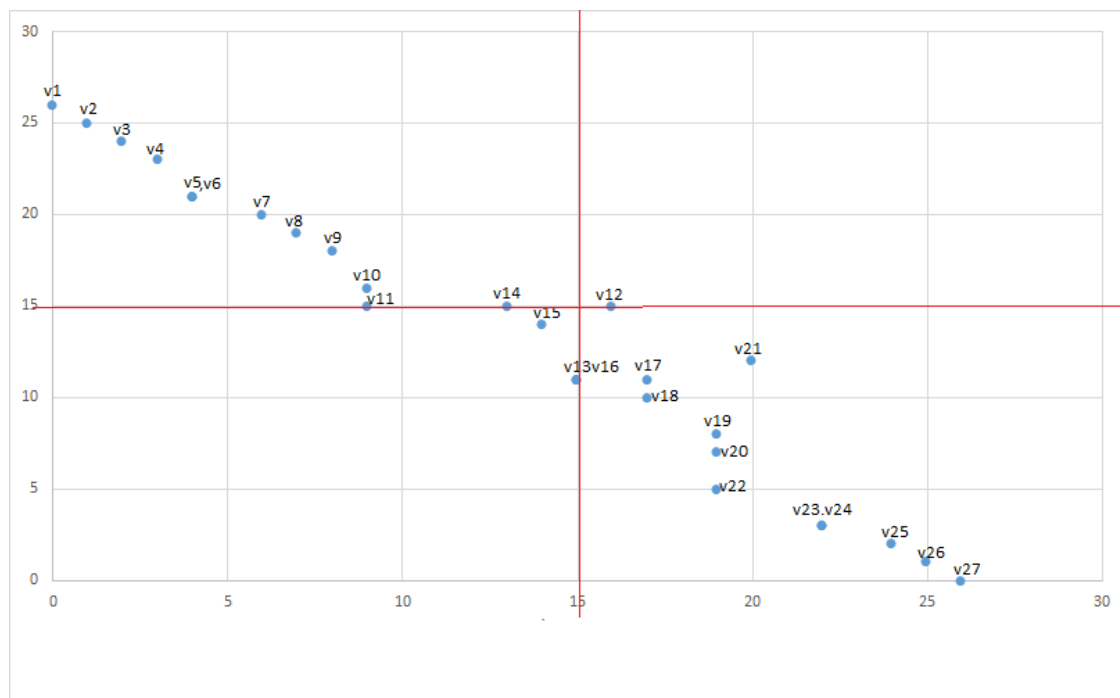
indigenous communities (V2), enhancing the awareness and knowledge of the local community about food ecotourism (V3), preserving and promoting local culture and arts (V4), promoting local climate-related capacities and local products (V5), attracting tourists to local and cultural experiences (V6), creating markets and competition for local products (V7), economic development of local communities through food ecotourism (V8), increasing income and employment through food ecotourism activities (V9), protecting and conserving the environment and natural resources (V10), sustainable use of natural resources in food

ecotourism activities (V11), and the need to implement changes and formulate supportive policies for food ecotourism development (V14).

Independent variables are foundational variables with strong driving power and low dependence. These variables operate as the structural basis of the model and should be emphasized at the beginning of the development process. In this study, the environmental impact and sustainability of food ecotourism activities emerged as an independent variable and should therefore be considered a key strategic priority in developing food ecotourism on Qeshm Island.

Figure 2

MICMAC Driving Power–Dependence Diagram of Factors Affecting Food Ecotourism Development



4. Discussion and Conclusion

The present study aimed to design an interpretive structural model of the factors affecting the development of food ecotourism on Qeshm Island using the Interpretive Structural Modeling (ISM) approach. The findings demonstrated that food ecotourism development is a multidimensional and interconnected phenomenon influenced by social, cultural, environmental, technological, economic, educational, political, and health-related variables. The hierarchical structure extracted from the ISM model revealed that variables associated with quality of life, healthy nutrition, and health standards occupied the upper levels of the model, whereas variables associated with

community participation, local culture, environmental sustainability, and policy support formed the foundational layers of the system. These findings indicate that the development of food ecotourism is not dependent solely on tourism marketing or culinary attractions, but rather on a complex structural interaction among multiple sustainable development components.

One of the most significant findings of the study was the placement of “the impact of food ecotourism activities on improving quality of life and community health” at the first level of the model. This result suggests that the ultimate outcome and most dependent variable within the food ecotourism system is the improvement of public well-being and social health. This finding is consistent with studies emphasizing the role of food tourism in improving social

welfare, promoting healthy lifestyles, and strengthening tourist satisfaction (Kaya, 2023; Pilis et al., 2022). Contemporary tourists increasingly seek experiences that contribute not only to entertainment but also to personal well-being, healthy nutrition, and meaningful engagement with sustainable lifestyles. Therefore, food ecotourism destinations capable of integrating healthy food systems, hygienic services, and environmentally responsible practices are more likely to improve both residents' and tourists' quality of life. The findings also align with research highlighting that health-oriented tourism and gastronomic tourism can significantly enhance destination attractiveness and consumer satisfaction (Bagheri et al., 2023; Salisu & Waziri, 2024).

The placement of “the importance of healthy nutrition and organic products in food ecotourism” at the second level further reinforces the increasing importance of health consciousness within tourism behavior. Tourists are becoming more attentive to food safety, organic products, nutritional value, and sustainable consumption practices. This result is strongly aligned with studies demonstrating that environmentally friendly food products and transparent food systems positively influence tourists' green purchasing behavior and destination image (Kuang et al., 2024; TingYue et al., 2024). The growing demand for organic and locally sourced food products reflects broader global trends toward sustainable consumption and ecological awareness. Consequently, destinations that prioritize healthy nutrition and organic food production may gain substantial competitive advantages within the tourism industry.

Another important finding was the positioning of “compliance with health and hygiene standards in food ecotourism activities” at the third level of the model. This finding indicates that hygiene and safety standards are among the critical operational factors influencing the sustainability and attractiveness of food ecotourism destinations. Particularly after the COVID-19 pandemic, tourists have become more sensitive to food hygiene, cleanliness, and public health standards in hospitality and tourism environments. This result is consistent with the findings of Durmaz et al., who emphasized that perceptions of gastronomy tourism and destination satisfaction are significantly influenced by health and safety conditions (Durmaz et al., 2022). Similarly, Pilis et al. argued that effective customer service management and hygiene practices are essential determinants of consumer trust and tourism competitiveness (Pilis et al., 2022). Therefore, adherence to hygiene protocols and health regulations

should be considered a strategic necessity for food ecotourism development.

The findings also revealed that technological and digital communication factors occupied middle levels within the ISM hierarchy. Variables such as digital communication, integration of information systems, and the use of modern technologies in tourism promotion were identified as influential supporting factors in the development process. These findings support previous studies emphasizing the increasing role of digital marketing and electronic communication in tourism management and destination branding (Bu et al., 2021; Etale & Uranta, 2022). The rapid growth of social media platforms and digital technologies has fundamentally transformed tourism marketing practices by enabling destinations to communicate directly with tourists, promote local products, and enhance destination visibility. Garcia Henche also emphasized that social media and digital communication tools significantly contribute to experiential tourism marketing and urban food destination branding (Garcia Henche, 2018). In the context of food ecotourism, digital technologies can improve tourists' awareness of local culinary experiences while simultaneously strengthening marketing efficiency and customer engagement.

The study further demonstrated that educational factors and skill development variables occupied intermediary levels within the structural model. Variables such as enhancing awareness regarding food ecotourism, promoting technical skills, and implementing updated educational strategies were identified as important components contributing to tourism sustainability. These findings are highly consistent with the work of Ishmael-Robertson, who emphasized the importance of human resource development in tourism systems (Ishmael-Robertson, 2018). Effective food ecotourism development requires knowledgeable stakeholders capable of managing tourism operations, preserving cultural authenticity, and implementing sustainable practices. Consequently, educational programs focusing on environmental sustainability, digital literacy, customer service, and entrepreneurship can significantly strengthen the quality and resilience of food ecotourism destinations.

Economic and market-related variables also emerged as highly influential factors in the model. The findings indicated that creating markets for local products, increasing income and employment, and supporting local businesses play substantial roles in strengthening food ecotourism systems. These results are aligned with studies

demonstrating that food tourism contributes directly to local economic development, regional branding, and employment generation (Bayat, 2023; Magdy, 2024). Food ecotourism creates economic linkages between tourism, agriculture, local entrepreneurship, and hospitality industries, thereby stimulating regional economic growth and reducing dependency on traditional economic sectors. Rana et al. similarly emphasized that community-based agri-ecotourism can revitalize local economies and empower rural populations through sustainable food systems and tourism participation (Rana & Bisht, 2023). Therefore, strengthening local economic structures should be considered an essential strategy for sustainable tourism development.

One of the most fundamental findings of the study was the identification of “environmental impact and sustainability of food ecotourism activities” as an independent and foundational variable within the model. This finding suggests that environmental sustainability functions as the structural basis of food ecotourism development and exerts significant influence on other variables in the system. This result strongly supports sustainable tourism theories emphasizing environmental conservation as a prerequisite for long-term tourism success (Stalmirska, 2020; Sulaiman et al., 2023). Sustainable use of natural resources, ecological protection, and environmental responsibility are essential for maintaining the attractiveness and viability of ecotourism destinations. The environmental orientation of food ecotourism also reflects the increasing demand for green tourism experiences among contemporary travelers.

Another major finding involved the importance of local community participation and indigenous cooperation as foundational drivers of food ecotourism development. Variables such as the role of local communities, cooperation with indigenous groups, and preservation of local culture were positioned in the deepest layers of the ISM hierarchy, indicating their strong driving power within the system. This finding is highly consistent with community-based tourism literature emphasizing local participation as a critical determinant of sustainable tourism success (Rana & Bisht, 2023; Sulaiman et al., 2023). Local communities serve not only as providers of cultural and culinary experiences but also as custodians of indigenous knowledge, traditional food systems, and ecological resources. Therefore, empowering local communities and strengthening stakeholder collaboration are necessary for preserving cultural

authenticity and ensuring equitable distribution of tourism benefits.

The cultural dimension of the findings also deserves particular attention. Variables related to preserving local culture, promoting indigenous products, and attracting tourists to cultural experiences occupied important positions within the structural hierarchy. These findings align with studies emphasizing that gastronomy and local cuisine function as expressions of cultural identity and destination uniqueness (Mohanty et al., 2020; Pavlidis & Μαρκαντωνάτου, 2020). Cultural authenticity is one of the most important motivations influencing food tourists’ travel decisions, and destinations capable of preserving traditional culinary heritage are more likely to generate memorable tourist experiences and stronger destination loyalty. Kim’s study on Generation Z tourists also demonstrated that food experiences significantly influence tourists’ behavioral intentions and destination preferences (Kim, 2025).

The MICMAC analysis additionally revealed that several variables possessed both high driving power and high dependence, classifying them as linkage variables. These variables, including local participation, economic development, cultural preservation, and environmental protection, were identified as highly unstable factors capable of influencing and being influenced by the broader system. This finding suggests that policy interventions targeting these variables may generate substantial systemic impacts across the food ecotourism network. The interconnected nature of these variables demonstrates the necessity of adopting integrated and multidimensional approaches to tourism planning and management.

The findings collectively indicate that food ecotourism development requires coordinated policy frameworks, sustainable environmental strategies, effective digital marketing systems, community participation, educational development, and economic support mechanisms. The multidimensional structure identified in this study confirms that food ecotourism is not merely a tourism activity but rather a comprehensive socio-economic and environmental system involving numerous interconnected stakeholders and processes. Therefore, policymakers and tourism planners should avoid fragmented approaches and instead prioritize integrated strategies capable of simultaneously addressing environmental sustainability, cultural preservation, community empowerment, and economic resilience.

One limitation of the present study was the relatively small sample size consisting of 30 tourism experts and managers, which may limit the generalizability of the

findings to other tourism destinations. In addition, the study focused specifically on Qeshm Island, and therefore the structural relationships identified in the ISM model may differ in other geographical and cultural contexts. Another limitation was the reliance on expert judgment in constructing the interpretive structural model, which may involve subjective evaluations and potential response biases. Furthermore, the study employed a cross-sectional design and did not examine changes in tourism dynamics over time.

Future studies are recommended to investigate food ecotourism development using larger and more diverse samples involving tourists, local residents, policymakers, and tourism entrepreneurs. Comparative studies between different tourism destinations could provide deeper insights into contextual differences affecting food ecotourism systems. Future researchers may also employ mixed-method approaches combining ISM with quantitative modeling techniques such as structural equation modeling or network analysis to validate and extend the findings of the present study. Additionally, future research should examine the long-term impacts of digital transformation, climate change, and evolving tourist behavior on sustainable food ecotourism development.

From a practical perspective, tourism policymakers and local authorities should prioritize sustainable environmental management, community participation, and health-oriented tourism policies when developing food ecotourism destinations. Educational and training programs should be implemented to improve local capacities in tourism management, digital marketing, food safety, and sustainable entrepreneurship. Tourism organizations should also strengthen digital communication infrastructures and social media marketing strategies to enhance destination visibility and promote local food products. Furthermore, investment in local agricultural systems, organic food production, and environmentally friendly tourism practices can contribute significantly to improving destination competitiveness and long-term sustainability.

Authors' Contributions

Authors contributed equally to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

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In this research, ethical standards including obtaining informed consent, ensuring privacy and confidentiality were considered.

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