

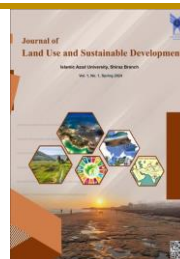


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Original Research Paper

Analysis of the Relationships among Natural Capacities Affecting the Empowerment of Local Communities for Sustainable Tourism Development in Mahmoudabad City

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Abstract

This study was conducted with the aim of analyzing natural capabilities in empowering local communities to promote sustainable urban tourism development in Mahmoudabad city. Sustainable tourism has diverse positive and negative impacts on local communities, including job creation as well as environmental and social adverse effects. Tourism in the studied area, besides exerting significant pressure on natural terrestrial and aquatic environments such as forests, plains, rivers, and the sea, has not yet attained its deserved economic, social, and cultural status. The present research is applied in purpose and descriptive-analytical and field-based by nature. Data collection was performed through library research and fieldwork, and the research instrument was a researcher-made questionnaire. Based on Cronbach's alpha test results, the minimum reliability coefficient for all variables was confirmed at 0.7. The research population consisted of households in Mahmoudabad and regional experts, with a sample size of 230 selected using Cochran's formula. Random sampling was applied for selecting the research samples, while 23 experts in the relevant field were chosen by convenience sampling. For data analysis, statistical methods and ArcGIS software were used; Shannon Entropy model determined the importance of indicators, and the VIKOR model was employed for ranking indicators and options. The results indicate that the coasts and rivers index, which received the highest ranking based on the Q index, also ranked best according to the S and R indices, occupying the first place. Conversely, wildlife attractions ranked last among natural capabilities in empowering local communities towards sustainable urban tourism development in Mahmoudabad.

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Introduction

The environmental dimension is an important tool for monitoring and managing sustainable development. This dimension is effective in determining policies and environmental protection measures as well as the rational and sustainable use of natural resources. Today, sustainable development is the key to solving most environmental issues and is considered one of the fundamental aspects of the environmental dimension ([Liu & Qiu, 2022: 286](#)). Certainly, sustainable development is never possible without a healthy environment with sufficient resources ([Chang et al., 2022: 57](#)).

On the other hand, renewable natural resources have played a fundamental and constructive role in the socio-economic transformations of different societies; in our country as well, renewable natural resources have continuously constituted the backbone of economic and social development, although their value and status have never been adequately acknowledged in this regard ([Ghorbani et al., 2016: 275](#)). In fact, today in our country, renewable natural resources, due to their direct and indirect effects, are the most important factor in the country's socio-economic development. Optimal utilization of these resources can guarantee sustainability and sustainable development, while neglecting them may potentially cause issues that seriously jeopardize the entire set of cultural, social, and economic development programs of the country ([Manouchehri et al., 2021: 506](#)).

Many participatory natural resource management programs have failed due to insufficient attention to the characteristics and positions of stakeholders within their social relationship networks. Identifying key actors or individuals is one of the prerequisites for the effective implementation of participatory natural resource management programs ([Bosworth et al., 2020: 23](#)). This matter becomes particularly significant when considering the geographical condition of the country, where more than 80% is located within arid and semi-arid regions, as well as the socio-economic structures, population distribution patterns, and settlement formation systems in

various parts of the country ([Castellano-Álvarez et al., 2020: 128](#)).

Traditional participation in Iran has roots in the rich history and culture spanning several thousand years and has evolved through various changes and developments, continuing until the land reforms. Generally, traditional participation arises from the customs, religion, and social culture of a society ([Moradzadeh, 2020: 3183](#)). People are more willing and able to participate in activities from which they benefit, and their interest and capacity increase by being involved in decision-making processes ([Chelongarian, 2020: 145](#)). The participatory role of local communities is fundamental to facilitating decentralized decision-making processes. According to planners, the success of community and local organization participation depends on understanding the functions of the socio-economic system and the ability to integrate human elements individually and collectively at the local level ([Mohebbati Zahan et al., 2020: 177](#)).

Various roles that fundamental organizations based on local communities play include facilitating decision-making processes for members, improving economic conditions, encouraging community capacities, and providing services. They serve as essential channels for organizing local communities ([Pretorius & Nicolau, 2020: 33](#)). It is believed that empowerment is the key to the success and sustainability of development projects in the field of natural resources. Empowerment is considered a fundamental principle in participatory development, and without attention to this issue, growth and development indicators cannot be achieved through the empowerment of local communities in various fields. Therefore, for sustainable development and progress of local areas, special focus must be given to the capacities, talents, and capabilities of these communities as well as the use of natural, social, and advanced technological resources ([Torre & Wallet, 2016: 83](#)). Empowering local communities is regarded as one of the most important parts of participatory projects in natural resource management ([Tahmasbi et al., 2021: 611](#)).

Mahmoudabad City is one of the northern cities that possesses many natural resources. This city is located near the Caspian Sea and, with its pristine nature, has always been host to many Iranian and foreign tourists. The county center is also Mahmoudabad. The people of this city earn their livelihoods through various activities such as tourism, fishing, and agriculture. This region, which is one of the cities in Mazandaran Province and also considered a port city, includes two cities named Mahmoudabad and Sorkhrud, holding an important position in northern Iran. The city, with its diverse coastal parks and religious attractions, has constantly drawn numerous tourists, and each year a large volume of villas in Mahmoudabad is rented to travelers and tourists. The geographical and regional location of Mahmoudabad has created the potential for this city to become one of the tourism hubs in northern Iran. Pleasant weather, unique climate conditions, proximity to the sea, pristine nature, and religious attractions together provide an unparalleled set of all the needs of a tourist destination. This excellent environment has brought together the government and the local people, particularly those interested in tourism and ecotourism, creating a place full of peace and enjoyment. The presence of these attractions in Mahmoudabad makes the city special in many respects, especially from environmental and natural perspectives. Given the high number of visitors, it is necessary to promote natural resource conservation culture among local communities, and the city should take steps toward sustainability through empowerment of local communities. Accordingly, the present study seeks to evaluate and analyze the role of natural capabilities in empowering local communities towards sustainable development.

Research Background

[Motevalli \(2023\)](#) wrote an article titled "An Analysis of the Role of Natural Factors in Sustainable Tourism Development in the Southern Regions of Mazandaran (Case Study: Bandpey District, Babol County)." The research results indicate that, considering the comparison of the average scores of items

evaluated regarding natural capabilities and sustainable tourism development in Bandpey District, and since the obtained significance level (sig) was below the alpha level of 0.05, it can be inferred that there is a significant relationship between natural capabilities and sustainable tourism development in Bandpey, Babol. The indicators of climatic attractions with a mean rank of 3.85, flora and fauna attractions with 3.46, and geological and geomorphological attractions with 2.98 respectively ranked first to third in sustainable tourism development in the studied region.

[Sabourjanati & Ghalandarian. \(2022\)](#) conducted a study entitled "Empowering Urban Ecotourism: A New Approach to Local Community Development." Empowerment has always been considered one of the core guidelines for improving the quality of life of local communities and can be implemented differently based on the existing context. Some underserved urban areas that require serious empowerment possess pristine natural potentials for ecotourism. Ecotourism, while creating a suitable quality environment for tourists, provides the greatest protection in various social, economic, cultural, environmental, and physical aspects for the host community. The research findings show that empowering urban ecotourism includes social, cultural, economic, political, cognitive-perceptual, and environmental dimensions. This approach methodically pursues social empowerment of host communities through individual empowerment, increased participatory capacity, social development, and social effectiveness.

[Achmad et al. \(2021\)](#) conducted their article titled "A Corporate Social Responsibility Program Based on Community Empowerment in Panglima Raja Village." Corporate Social Responsibility (CSR) is an obligation that every company must fulfill to have a positive impact on the surrounding community. PT Syams Arief Shumun is a subsidiary company operating in palm oil processing and natural resource management in Kampar Regency. This company implements three community-based CSR programs: first, economic empowerment; second, environmental

empowerment; and third, social empowerment. This research used a qualitative approach with descriptive methods, collecting data through observation, interviews, and studies of literature related to social responsibility and community empowerment. Data determination techniques included purposive sampling, and data analysis employed data triangulation.

[Surya et al. \(2020\)](#) conducted their study titled "Natural Resource Conservation Based on Economic Empowerment of Communities: Watershed Management and Slum Settlement Perspectives in Makassar City, South Sulawesi, Indonesia." The aim of this study was to analyze the impacts of slum development, community poverty, and social behaviors on environmental degradation of the Tallo River basin in Makassar City and to evaluate the effects of natural resource conservation, economic empowerment, and community capacity building on productivity. The study applied a mixed quantitative-qualitative approach. Data were gathered using observation, surveys, and documentation. Findings showed that slums, poverty, and social behavior significantly affected the environmental quality reduction of the Tallo River basin with an R-squared value of 32.2%. The results also indicated that natural resource conservation, economic empowerment, and community capacity building positively correlated with increasing productivity of community enterprises and the sustainability of watershed ecosystems. The claim is that watershed conservation, alongside economic empowerment, supports economic, social, and environmental sustainability. This study presented the concept of natural resource conservation based on economic community empowerment as a solution for addressing slums in major Indonesian cities to support metropolitan development programs at the national level.

Theoretical Foundations of Research

A role is defined as the set of responsibilities and behaviors that individuals in a society are expected to perform. From this understanding, a role essentially refers to the actions carried out by an individual, which are linked to their

position within a social structure. In relation to society, a social role means the actions performed by a group of individuals reflecting behavioral similarities as a shared entity connected to a specific social structure ([Rajabi et al, 2024: 3](#)).

So far, the role of society in tourism development has not reached its full potential because people do not know how to optimally develop tourism and utilize the business opportunities it offers. The general public's lack of knowledge about tourism is also due to insufficient government support in providing understanding of the tourism world, as the education level of people regarding tourism remains minimal.

The role of society in tourism development can be summarized as follows:

- **Society as an Initiator:** where the community is the first to discover tourism potential.
- **Society as an Implementer:** becoming the party that initiates implementation and develops tourism until achieving a tourism product.
- **Society as a Participant:** where the community participates in the tourism development process but not as an authoritative party; rather, as one of the actors involved in tourism development.
- **Society as a Monitor:** where the community is not a party to tourism development but oversees its progress and impacts.
- **Society as a Stakeholder:** where the community may not participate directly in tourism development but benefits from it ([Hardy & Pearson, 2017: 32](#)).

The various roles of the community fundamentally aim to support tourism development in Samberjaya Village but with differing levels of intensity and interests.

At the local level, specific domains of authority and responsibilities related to tourism are usually assigned to representatives of the local community or local government officials. To be more effective, local governments collaborate nationally and internationally with other

political and non-political institutions. One important form of collaboration includes joint efforts among local residents, tourists, and the public sector ([Liao & Chern, 2015: 99](#)). However, other institutions must also participate in the process to facilitate the development of the tourism sector using laws and guidelines related to the concept of sustainable development. All stakeholders should discuss relevant issues together. This is because all stakeholders possess different interests and objectives and do not represent a united front ([Liu et al., 2017: 100](#)).

In discussions about tourism, the diversity of stakeholders defending their own perspectives and often opposing goals requires an innovative approach to managing decision-making processes, demanding appropriate tools ([Domínguez-Gómez & González-Gómez, 2017: 136](#)). Besides analyzing the differing viewpoints of various stakeholders involved in decision-making, it is vital to recognize that uncontrolled tourism development may negatively affect local communities as well as the natural environment. While completely eliminating negative consequences is difficult, key actors in the tourism industry and local residents must collaborate to reduce disruptive impacts associated with tourism development ([Al Hajja, 2011: 94](#)).

In this context, it seems that the local government is the natural leader, with two main duties: improving the living standards of local people and managing local resources. The purpose of this study is an analysis of empowering local communities for sustainable tourism development, emphasizing natural capabilities in Mahmoudabad City. To achieve this goal, we aim to assess the impact of empowering local communities based on natural capabilities on sustainable tourism development in the study area.

Research questions include:

- Do local communities take actions toward sustainable tourism development?
- Do local communities cooperate at national and international levels in tourism development?

- What is the hierarchical position of local communities in joint efforts with other active institutions in the tourism development sector?
- Do conflicts arise among partners regarding tourism development?
- From the perspective of local governments, does cooperation depend on the occurrence of conflict situations?

A vast body of literature exists on sustainable development ([Liu et al., 2017: 101](#)). Its application in tourism development is a relatively new trend, dating back only to the late 1980s. Previous studies had referred to sustainable development in the tourism sector, but these were conducted in various different contexts ([Rasouli et al, 2025: 85](#)). Documents produced by organizations and institutions related to tourism development played a significant role in the emergence of sustainable development as a key element in tourism growth. For example, a document titled "Agenda 21 for Travel and Tourism Management" from 1995 included fundamental ideas related to sustainable development. Another example is the "Global Code of Ethics for Tourism" document from 1999. Early analyses of sustainable tourism development often included repeated references to the need to clearly define this concept ([Rajabi et al, 2024: 65](#)).

Implementing the principles of sustainable development requires the participation of a wide range of stakeholder representatives, from the public sector to local communities. Moreover, popular efforts are needed to build capacity and provide direction for action for each stakeholder group. Stakeholders must work together, although strong leadership and support from local governments are also necessary ([Rasouli et al, 2024: 2](#)). As Cuthill (2002) pointed out, relationships between organizations and stakeholder groups at the social level are often disorganized and chaotic when they should be based on collaboration at the local level through partnership building between residents and local governments ([Cuthill, 2002: 80](#)). To make better use of these partnerships, stakeholder groups, particularly

local communities, should receive more education regarding the principles of sustainable development, and efforts to initiate collaboration should be supported. Based on

theoretical studies, Table 1 presents the research indicators.

Tab 1. Components and Variables Related to the Empowerment of Local Communities in Sustainable Tourism Development

Dimension	Criterion	Indicator	Source
Economic	Employment and Income	Reduction in unemployment rate, attraction of skilled workers in tourism, increase in local community satisfaction with tourism income, increased job opportunities for youth, increase in land prices in and around Mahmoudabad	Badko et al., 2020; Pretorius & Nicolau, 2020
	Income Distribution and Employment Opportunities	Attraction of surplus labor force in tourism sector, increase in income of tourism workers during peak season, increase in purchasing power of local community	Benites-Lazaro & Mello-Théry, 2019
	Economic Strengthening	Establishment of local economic units, increased support for small local investors, government investment in tourism sector, private sector investment in tourism	Nematollahi et al., 2019; Moallemi et al., 2020
Social	Social and Welfare Changes	Satisfaction of local residents with the entry of new services and infrastructure resulting from tourism, improvement of social welfare in terms of health, education, etc., increase in public awareness and knowledge about their environment	Fattahi et al., 2019; Surya et al., 2020
	Support for Indigenous Cultures and Cultural Heritage	Increased support for handicrafts and local music, preservation of unique customs and traditional ceremonies of Mahmoudabad, extent of change in values and culture of locals due to tourism influx, advertising activities to attract tourists	Riyahi et al., 2016; Ramaano, 2022
	Social Participation	Participation of people in implementing tourism development projects and plans, participation in introducing tourism attractions to tourists, participation of women and girls in providing tourism services, local people's interaction with tourists, participation in training courses for tourism service provision	Sabbaghian, 2019; Lahijaniyan & Vaskoui, 2016
	Development of Local Social Service Infrastructure	Improved access to Mahmoudabad through enhancement of main and secondary roads, increased quality of accommodation, food, and transportation services, availability of local accommodation, transportation, and products	Fal Soleiman & Hajipour, 2013; Khalid et al., 2019
Environmental	Land Use Changes	Inverse ratio of changes in agricultural land and gardens to other activities, inverse ratio of unplanned construction in natural areas for attracting tourists, utilization of existing natural capacities in Mahmoudabad	Alborzi-Mansh et al., 2021; Dabiri et al., 2018; Franco & Tracey, 2019
	Environmental Pollution	Observance of environmental cleanliness, collection and disposal of surface water, improvement of waste disposal methods, accessibility to health services, cooperation in environmental protection and hygiene, inverse ratio of tourists' impact on air pollution	Abutalebi et al., 2018; Keyvanfar & Lari, 2015; Achmad et al., 2021
	Environmental Degradation	Inverse ratio of natural beauty degradation, belief in nature conservation, inverse ratio of decline in plant species, inverse ratio of decline in animal species	Akbarzadeh et al., 2019; Fal Soleiman & Hajipour, 2013

Methodology

This research is descriptive-analytical in nature, with data collected using both library and survey methods. The statistical population

includes the residents of Mahmoudabad and experts. According to Cochran's formula, the sample size for the residents was determined to be 380 based on the 2016 census population of

31,844, and 30 experts were selected through purposive random sampling. The collected data were initially processed using SPSS software and subsequently analyzed using Pearson correlation and one-sample t-tests. Additionally, the VIKOR method was employed to examine and rank the role of natural capacities in empowering local communities in Mahmoudabad neighborhoods. Furthermore, required map analyses were conducted using GIS software.

Research Area

Mahmoudabad city is geographically located south of the Caspian Sea, approximately in the central northern part of Mazandaran province, and on the western side of Mahmoudabad County. Mahmoudabad is situated at 52 degrees 15 minutes east longitude and 36 degrees 36 minutes north latitude. The city is bordered to the north by the Caspian Sea, the world's largest strategic lake; to the south by the city of Amol; to the east by the newly established city of Sorkhrud, which lies outside the county limits; to the southeast by the city of Fereydunkenar; and to the west by the city of Noor. The distance

from Mahmoudabad to the center of Mazandaran province is 88 kilometers. Due to its special touristic and coastal location, Mahmoudabad holds a significant position. The physical development of this city over recent years has been largely driven by its touristic role and function. It is worth noting that Mahmoudabad is the administrative center of the county bearing the same name, which was separated from Amol County in 1995. Mahmoudabad covers an area of 56.8 square kilometers, and its average elevation is 22 meters below sea level ([Eghbali et al., 2021](#)). According to the general population and housing censuses, the population of Mahmoudabad was 20,054 people in 1996, 27,748 in 2006, 31,771 in 2011, and reached 31,844 in 2016. The number of households in Mahmoudabad in 2016 was 10,399. The female population was 15,644 persons (49% of the total population), and the male population was 16,200 persons (51% of the total population). Thus, the population of Mahmoudabad grew at an average annual rate of 2.4% over the period 1996–2016 ([Statistical Center of Iran, 2016](#)).



Figure 1. Location of Mahmoudabad in Iran
Source: Research findings, 2025

Research Findings

There is a significant relationship between natural capabilities and the empowerment of local communities for sustainable urban tourism development in the study area. This hypothesis consists of four subsidiary hypotheses, each of which is explained and addressed below.

First Subsidiary Hypothesis

Is there a significant relationship between natural capabilities and sustainable tourism development for the empowerment of the local community in Mahmoudabad City? To test this hypothesis, the natural capabilities of Mahmoudabad were identified in three groups:

climatic attractions, fauna and flora attractions, and natural tourism and ecotourism attractions such as waterfalls, rivers, and wetlands. Then, to examine the relationship between these natural capabilities and sustainable tourism development for the empowerment of the local community in Mahmoudabad, 10 questions were designed using a Likert scale and randomly distributed among 230 individuals, including local residents, local managers, and tourism operators in Mahmoudabad. The collected data were analyzed using a one-sample t-test, and the results are presented in Table 2.

Tab2. Examination of Natural Capabilities and Sustainable Tourism Development for Empowering the Local Community in Mahmoudabad City Using One-Sample t-Test

Variable	Number of Questions	N	Mean	Standard Deviation	t-value	Degrees of Freedom	Significance Level
Climatic Attractions	3	230	3.95	0.35	-22.61	229	0.000
Fauna and Flora Attractions	2	230	3.84	0.47	-37.41	229	0.000
Natural Tourism and Ecotourism	5	230	4.87	0.46	-33.42	229	0.000
Total Natural Attractions	10	230	4.90	0.33	-31.75	229	0.000

Source: Research findings, 2025

Based on the results of the one-sample t-test examining the impact of natural capabilities on sustainable tourism development and the empowerment of the local community, the interpretation of findings is as follows:

Climatic Attractions: A mean of 3.95 with a standard deviation of 0.35 indicates that respondents have a positive evaluation of the impact of climatic attractions on sustainable tourism. The t-value of -61.22 and a significance level of 0.000 indicate a significant difference between the observed mean and the hypothetical mean, reflecting a considerable effect of climatic attractions on sustainable tourism development.

Fauna and Flora Attractions: A mean of 3.84 and a standard deviation of 0.47 show that these attractions also play an important role in tourism development from respondents' perspectives. The t-value of -41.37 and significance level of 0.000 demonstrate a meaningful impact of these attractions on sustainable tourism and the empowerment of the local community.

Natural Tourism and Ecotourism Attractions: A mean of 4.87 and a standard deviation of 0.46 indicate that these attractions received the highest score regarding their impact on sustainable tourism. The t-value of -42.33 and significance level of 0.000 emphasize that this variable significantly influences sustainable tourism development.

Total Natural Attractions: A mean of 4.90 and a standard deviation of 0.33 indicate the very high importance of natural attractions in sustainable tourism development. The t-value of -75.31 and significance level of 0.000 indicate that this variable also significantly impacts tourism development and is considered one of the main pillars of sustainable tourism in the study area.

Given the significance of all variables (significance level less than 0.05) and the negative t-values, it can be concluded that natural attractions have a remarkable role in sustainable tourism development and the empowerment of the local community. Among these, natural tourism and ecotourism attractions have the greatest impact according to the respondents. Therefore, planning and investing in the conservation and sustainable utilization of these natural resources can promote tourism growth and improve the economic and social conditions of the local community.

Second Subsidiary Hypothesis

It appears that the indicators of sustainable tourism development in the study area for empowering local communities utilize diverse local capabilities.

To test this hypothesis, various sustainable tourism variables were identified, including community resource identification for tourism, natural capabilities for tourism, environmental awareness and behaviors, environmental

education for tourism, and stakeholder engagement. Questions related to these variables were designed, and then their impact on sustainable tourism for empowering the

local community of Mahmoudabad city was examined using a one-sample t-test. The results are presented in Table 3.

Tab 3. Impact of Sustainable Tourism Variables on Empowering the Local Community of Mahmoudabad City Using One-Sample t-Test

Variable	Number of Questions	N	Mean	Standard Deviation	t-value	Degrees of Freedom	Significance Level
Community Resource Identification for Tourism	6	230	4.48	0.51	18.47	229	0.000
Natural Capabilities for Tourism	4	230	4.65	0.49	17.38	229	0.000
Environmental Awareness and Behaviors	10	230	4.39	0.50	18.41	229	0.000
Environmental Education	5	230	4.41	0.48	19.33	229	0.000
Stakeholder Engagement	4	230	4.82	0.61	25.02	229	0.001
Total Sustainable Tourism Indicators	29	230	4.63	0.59	24.13	229	0.000

Source: Research findings, 2025

The results of the one-sample t-test examining the impact of sustainable tourism variables on the empowerment of local communities show that all the variables studied have means above 4, indicating a positive attitude of the local community toward these factors.

- 1) **Community Resource Identification for Tourism:** With a mean of 4.48 and a t-value of 18.47, this factor significantly influences the empowerment of local communities according to respondents ($p < 0.001$).
- 2) **Natural Capabilities for Tourism:** With a mean of 4.65 and a t-value of 17.38, this variable also has a positive and significant impact on community empowerment ($p < 0.001$).
- 3) **Environmental Awareness and Behaviors:** A mean of 4.39 and a t-value of 18.41 indicate that this component plays a considerable role in strengthening local communities ($p < 0.001$).
- 4) **Environmental Education:** With a mean of 4.41 and a t-value of 19.33, this variable positively and

significantly affects local community empowerment ($p < 0.001$).

- 5) **Stakeholder Engagement:** With a mean of 4.82 and a t-value of 25.02, this factor shows the greatest impact among all variables and plays a very important role in community empowerment ($p < 0.001$).
- 6) **Total Sustainable Tourism Indicators:** With a mean of 4.63 and a t-value of 24.13, this represents the overall positive and significant effect of sustainable tourism on empowering local communities ($p < 0.001$).

In summary, the findings show that all variables examined in this study have a positive and significant effect on the empowerment of local communities, especially the stakeholder engagement variable, which had the highest impact. Therefore, this hypothesis is confirmed.

Third Subsidiary Hypothesis

Education and participation of local communities, as important dimensions of empowerment in geotourism and biotourism, largely affect sustainable tourism development in Mahmoudabad city.

To test this hypothesis, four questions regarding education and participation of local communities—as one of the dimensions of community empowerment—were designed in the questionnaire. The collected data related to the impact of education and participation of

local communities in geotourism and biotourism on sustainable tourism development in Mahmoudabad city were analyzed using a one-sample t-test. The results are presented in Table 4.

Tab 4. Impact of Education and Participation of the Local Community in Mahmoudabad on Geotourism and Biotourism Development within Sustainable Tourism Development Using One-Sample t-Test

Variable	Number of Questions	N	Mean	Standard Deviation	t-value	Degrees of Freedom	Significance Level
Education and Participation of Local Community	4	230	4.38	0.77	18.13	229	0.000

Source: Research findings, 2025

The results of the one-sample t-test for the variable "Education and Participation of Local Community" show that this factor, with a mean of 4.38 and a t-value of 18.13, has a positive and significant effect on the empowerment of local communities ($p < 0.001$). This indicates that education and participation play an important role in sustainable tourism development and enhancing the capacity of local residents. The mean value above 4 reflects a positive attitude of respondents toward this factor, which may indicate the influence of educational and participatory policies in improving the status of local communities. Based on these results, this hypothesis is accepted.

Fourth Subsidiary Hypothesis

Tab 5. Examination of the Relationship between Local Community Empowerment and Sustainable Tourism in Mahmoudabad City Using Pearson’s Correlation Coefficient

Independent Variable	Dependent Variable	Correlation Coefficient (r)	Significance Level (p)	Sample Size (n)
Local Community Empowerment	Sustainable Tourism Development	0.565	0.000	230

Source: Research findings, 2025

The results of Pearson’s correlation test indicate a positive and significant relationship between local community empowerment and sustainable tourism development ($r = 0.565$, $p < 0.001$). This correlation coefficient indicates that as community empowerment increases, the level of sustainable tourism development also rises. Since the significance level is less than 0.05, this relationship is statistically significant and

suggests that the empowerment of local communities can be considered a key factor in the improvement and sustainability of tourism.

Second Main Hypothesis

It is assumed that conservation of natural capacities, local community empowerment, and community support for tourism contribute to the sustainable tourism development of

Mahmoudabad city. This hypothesis was tested using multiple linear regression analysis.

Tab 6. Regression Model Summary Testing the Relationship Between Conservation of Natural Capacities, Local Community Empowerment, Community Support for Tourism, and Sustainable Tourism Development in Mahmoudabad City

Model	R	R Square	Adjusted R Square	Standard Error of Estimate	Durbin-Watson Statistic
1	0.563	0.266	0.261	0.235	1.93

Source: Research findings, 2025

In this table, the amount of serial autocorrelation is reported through the Durbin-Watson test. A value close to 2 (between 1.5 and 2.5) indicates the absence of autocorrelation of residuals. As seen in the table, the Durbin-Watson statistic is 1.93, which means the regression data have no autocorrelation and are suitable for multiple linear regression analysis.

Based on the results presented, the correlation coefficient (R) is 0.563, indicating a moderate

and appropriate level of correlation between the independent variables (conservation of natural capacities, local community empowerment, and community support for tourism) in predicting the dependent variable (sustainable tourism development). The R Square (coefficient of determination) value of 0.266 shows that approximately 26.6% of the variation in sustainable tourism development can be explained by these independent variables, which is considered acceptable.

Tab 7: Regression Analysis of the Relationship Between Conservation of Natural Capacities, Local Community Empowerment, Community Support for Tourism, and Sustainable Tourism Development in Mahmoudabad City

Model	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level (p-value)
Regression	75.5	2	37.75	57.98	0.000
Residual	68.21	229	0.295		
Total	143.71	231			

Source: Research findings, 2025

According to the results shown in the table above, the significance level ($p = 0.000$) is less than 0.05; therefore, the regression model is appropriate and statistically significantly predicts the dependent variable. In other words, there is a significant linear relationship between the independent variables and the dependent variable included in the model.

Furthermore, based on the calculated F-value at a 95% confidence level, the linear combination of independent variables—including conservation of natural capacities, local community empowerment, and community support for tourism—significantly explains approximately 57.98% of the variation in sustainable tourism development.

Tab 8. Regression Coefficients for the Relationship Between Conservation of Natural Capacities, Local Community Empowerment, Community Support for Tourism, and Sustainable Tourism Development in Mahmoudabad City

Model	Standardized Coefficients		Standardized Coefficients	t-value	p-value	Multicollinearity statistics	
	B	Std. Error	Beta coefficient			Variance Inflation Factor (VIF)	Variance Inflation Factor (VIF)

Constant	0.918	0.088		11.65	0.000	0.793	1.27
Conservation of Natural Capacities	0.436	0.042	0.285	5.56	0.000		
Community Support for Tourism	0.430	0.045	0.260	5.07	0.000	0.793	1.27
Local Community Empowerment	0.535						

Source: Research findings, 2025

The findings in Table 8 indicate that to examine the absence of multicollinearity among the independent variables, the Variance Inflation Factor (VIF) was used. Since the VIF values for the three variables — conservation of natural capacities, local community empowerment, and community support for tourism — are all 1.27, which is below the threshold of 5, the assumption of no multicollinearity among the independent variables is accepted.

Furthermore, the significance levels ($p = 0.000$) are less than 0.05, meaning that conservation of natural capacities, local community empowerment, and community support for tourism significantly predict sustainable tourism development in Mahmoudabad city.

The predictive power of each variable, based on the standardized Beta coefficients, is as follows:

- Conservation of Natural Capacities: 0.436
- Community Support for Tourism: 0.430

- Local Community Empowerment: 0.535

The positive Beta coefficients indicate a direct relationship between the independent variables and the dependent variable. In other words, increases in conservation of natural resources, community support for tourism, and local community empowerment lead to growth and development of sustainable tourism in Mahmoudabad city.

Fourth Main Hypothesis

It seems that there are significant relationships between local community empowerment, community support for tourism, and sustainable tourism development. This hypothesis has been tested using the Partial Least Squares (PLS) method in the SmartPLS software, as described below.

Examining the Relationship Between Local Community Empowerment, Community Support for Tourism, and Sustainable Tourism Development in Mahmoudabad City Using Partial Least Squares (PLS) Method

Tab 9. Final Impact Coefficients of Tourism Infrastructure on Mahmoudabad City Tourist Attractions

Area	Q Value	Final Rank	Area	Q Value	Final Rank
Laleh Coastal Park	22.66	4	Sorkhrud Beach	34.98	20
Mellat Coastal Park, Mahmoudabad	21.31	5	Tahbaz Forest Park	18.01	10
Mahmoudabad Weekly Market	19.49	7	Sorkhrud Wetland	17.43	12
Caspian Sea Beach	20.50	6	Tashbandan Forest Park	17.96	11
Al-Ghadir Market, Mahmoudabad	19.35	8	Ahlam Forest	14.08	17

Area	Q Value	Final Rank	Area	Q Value	Final Rank
Emamzadeh Qasem	22.90	3	Koloudeh Village	16.49	16
Bundeh Forest	14.01	19	Sorkhrud Ancient Hills	13.96	21
Mahmoudabad Fish Market	18.02	9	Lavij Village	14.99	18
Sorkhrud Sandy Beach	17.04	13	Ab Pari Waterfall	13.90	22
Hyrceanian Forests	16.61	14	Simorgh Recreational and Commercial Complex	23.25	2
Azadmoon Lake and Village	16.58	15	Dreamland Amusement Park	23.38	1

Source: Research Findings, 2025

According to the results of the VIKOR analysis, the tourist attractions Dreamland Amusement Park, Simorgh Recreational and Commercial Complex, Emamzadeh Qasem, Laleh Coastal Park, Mellat Coastal Park, Caspian Sea Beach, Mahmoudabad Weekly Market, Al-Ghadir Market, and Mahmoudabad Fish Market are ranked from 1 to 9, indicating a relatively favorable status in terms of tourism infrastructure.

The Tahbaz Forest Park, Tashbandan Forest Park, Sorkhrud Wetland, Sorkhrud Sandy Beach, and Hyrcanian Forests are ranked from 10 to 14, indicating average tourism infrastructure.

Azadmoon Lake and Village, Koloudeh Village, Ahlam Forest, and Lavij Village are ranked 15 to 18, indicating unfavorable conditions.

Finally, Bundeh Forest, Sorkhrud Beach, Sorkhrud Ancient Hills, and Ab Pari Waterfall rank 19 to 22, indicating very unfavorable tourism infrastructure conditions.

Conclusion

Empowerment is defined as the ability to take action at an individual or collective level. Empowerment can be a useful tool for enhancing the capacities and assets of local communities, both individually and collectively. However, community empowerment requires the participation of community members and collective action, not just individual efforts. In the context of tourism development, community empowerment is a

vital element in implementing sustainable tourism.

Historically, researchers have emphasized a strong connection between empowering local people and the welfare of the community through tourism. Although numerous studies have focused on public power and community participation without considering community empowerment and its role in sustainable tourism, the empowerment of residents is a prerequisite for achieving sustainable tourism. Top-down tourism planning approaches create conflicts of interest between tourism planners and rural communities, disrupting community participation and ultimately hindering the overall development of tourism. This approach also leads governments and other stakeholders to hold power and avoid involving residents in decision-making.

On the other hand, natural capacities play a central role in sustainable tourism development. Through implementing sustainable management policies, conserving natural resources, and developing appropriate infrastructure, these capacities can be harnessed to increase tourist attraction, boost the economy, improve citizens' quality of life, and protect the environment. The results of this research also show that natural attractions—especially ecotourism, climatic attractions, and flora and fauna—are among the most important factors influencing sustainable tourism development and community empowerment in Mahmoudabad. Therefore, precise planning, investment in protecting these resources, and

developing sustainable infrastructure can lead to tourism growth and improved economic and social conditions of local communities.

Furthermore, results indicate that all sustainable tourism indicators, including resource identification, natural capacities, environmental awareness, environmental education, and stakeholder participation, have a significant impact on community empowerment. Among these, stakeholder engagement and recognition of natural capacities have had the greatest influence. Hence, investing in environmental education, identifying local capacities, and actively involving stakeholders can lead to sustainable tourism development and empowerment of local communities.

Moreover, the findings show that educational programs and community participation play a key role in empowering residents and promoting sustainable tourism development. In fact, educational policies and participatory actions can enhance environmental awareness, strengthen social belonging, and increase active participation of local residents in tourism development.

Given the significant impact of education and local community participation on sustainable tourism development, it can be concluded that achieving sustainable tourism development in Mahmoudabad city requires comprehensive planning in the areas of community education and increasing their participation in management and implementation processes. This approach not only increases employment and improves the economic status of local residents but also helps conserve natural resources and strengthen the region's cultural identity.

Accordingly, strengthening educational policies and participatory programs can be considered an effective strategy for sustainable tourism development in Mahmoudabad. Also,

confirming the significant relationship between empowerment and sustainable tourism development indicates that empowering local residents can play a key role in tourism sustainability. In fact, more empowered local communities will be better able to sustainably utilize existing tourism potentials, participate more actively in decision-making processes, and ultimately benefit from the economic, social, and environmental advantages of sustainable tourism.

It can be stated that investing in community empowerment through education, institutional support, and strengthening tourism-related skills can play an important role in sustainable tourism development. This not only leads to improved living conditions for local residents but also enhances the quality of tourism services and attracts sustainable tourists to the region.

Finally, the results reveal that conservation of natural capacities, local community empowerment, and community support for tourism significantly contribute to sustainable tourism development in Mahmoudabad. In other words, increasing the protection of natural resources, enhancing the capabilities of the local community, and active community support for tourism can advance and sustain tourism in this area.

The VIKOR model analysis results also showed that attractions such as Dreamland Amusement Park, Simorgh Recreation and Commercial Complex, Emamzadeh Qasem, Laleh Coastal Park, Mellat Coastal Park, Caspian Sea Beach, Mahmoudabad Weekly Market, Al-Ghadir Market, and Mahmoudabad Fish Market enjoy better tourism infrastructure conditions. These findings are illustrated in Figure 2 of the present study.

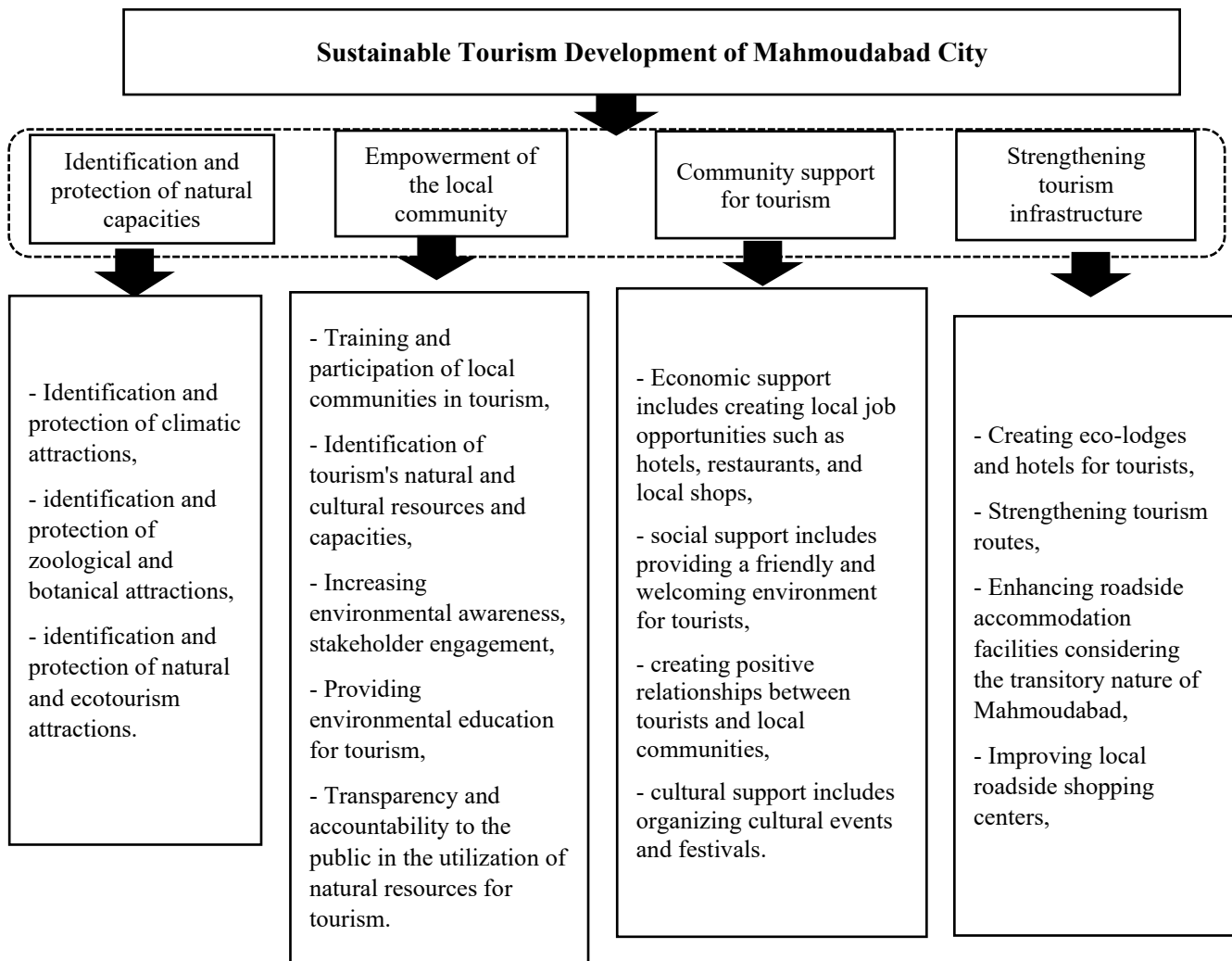


Fig2. Summary of Results Presented in the Research
Source: Authors, based on the research findings, 2025

As observed, the findings of the present study indicate a significant and important relationship between natural capacities and the empowerment of local communities in urban sustainable tourism development in the studied region. These results can be compared and aligned with previous studies in this field. In the reviewed domestic studies presented in the literature review, it was found that both [Motevalli's \(2023\)](#) article and the present study emphasize a significant relationship between natural capacities and sustainable tourism development. A notable similarity lies in the selection of natural attraction indicators (climatic, faunal, and floral) that play a key role in sustainable tourism development. The major difference is that the present study places greater emphasis on the role of local community empowerment alongside identifying natural capacities, with hypothesis testing conducted using more comprehensive field data and broader statistical analyses.

In the examination of [Sabourjanati & Ghalandarian \(2022\)](#), it was revealed that this article, like the present study, also emphasizes empowerment as a fundamental strategy for improving quality of life and sustainable development. The current research provides findings across various social, economic, and environmental dimensions of local communities, examining empowerment within a comprehensive framework. Ghalandarian's study focuses more on urban ecotourism and diverse cultural, social, and political dimensions, whereas the present study specifically addresses empowerment in urban sustainable tourism development with an emphasis on natural resources and attractions.

Among the reviewed international studies, [Achmad et al. \(2021\)](#) shares a community-based empowerment approach similar to the present study, both highlighting the importance of social responsibility and economic, environmental, and social empowerment. A major distinction lies in the geographical and operational context; Achmad's study focuses on industrial companies and corporate

social responsibility programs, while the present research centers on empowering local communities for sustainable tourism development in a tourist urban setting.

Finally, a comparison between [Surya et al. \(2020\)](#) and the present study shows that both stress the role of natural resource conservation and economic empowerment in ecosystem sustainability and sustainable development. The difference is in the scale of the studies; Surya's article concentrates on urban slum communities and watershed structures in Indonesia, whereas the current research focuses on sustainable tourism development and empowerment of urban local communities in northern Iran. Additionally, the present study places more emphasis on community participation and education, which is less prominent in Surya's article.

Research Recommendations

1. Assessing the level of local community participation in tourism planning and management
2. Analyzing the environmental impacts of tourism development in Mahmoudabad and proposing sustainable solutions
3. Examining the effects of tourism on natural resources and the regional ecosystem
4. Providing environmental management strategies to reduce the negative impacts of tourism
5. Investigating ecotourism capacities in Mahmoudabad and their impact on urban sustainable development
6. Identifying natural attractions and sustainable ways to utilize them
7. The role of ecotourism in improving the local economy and protecting the environment
8. Analyzing the role of tourism infrastructure in sustainable development of Mahmoudabad
9. Studying indigenous models of local community empowerment for sustainable tourism development

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