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Applications of Z score Method for Assessment of Tourism Development in District of Chhatrapati Sambhajinagar, India

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Abstract

India is unified in terms of its natural and social diversity. In India, primary business is presented first, followed by secondary, tertiary, and tertiary businesses. One of them is the tourism industry, which is a business that is developing in modern times, but the process of tourism has existed in India since ancient times. Many countries such as India have abundant natural resources, and tourism development businesses run on these natural resources. In India, various tourism centers, such as natural and human resources, religious tourism centres, heritage sites, natural places, sanctuaries, and wildlife have been developed. Despite this, some tourist centres are far behind in terms of development. In short, such tourist centres have huge potential for development. However, due to a lack of facilities or publicity, such tourist centres have not been developed. In short, for the development of any tourist centre, the attraction of that tourist center is not an important factor, but the various facilities available at that tourist center also affect tourism development. The main objective of this research is to evaluate the level of tourism development in Chhatrapati Sambhajinagar district from this point of view. For this, the Z-score method was adopted to evaluate the tourist center. In short, the Z-score method was used to determine the level of tourism development.

Keywords: Z-score, Assessment, Tourism Development, Facilities, Applications

Introduction

Tourism is an economic activity that has had far-reaching social and international impacts in the 20th and 19th centuries. Travel and tourism are leading industries in the world, providing employment to a large number of people. Tourism is considered to be the largest and most famous industry in modern times. Tourists generate 10% of the total output in all countries. Tourism is a business that falls within the service sector. This helps in generating employment and increasing the economy and infrastructure, and this business has a major contribution to reducing regional disparities. Therefore, the tourism industry is considered the fourth pillar of the contemporary economy. Agro tourism is a business that has developed in modern times in agricultural countries such as India. Tourism includes various types, such as natural, religious, cultural, historical, political, and educational. However, to preserve the culture of rural areas in the hectic life of urban areas, the process or element of agro-tourism is leading in rural areas. In this context, agro-tourism is mainly practiced in rural areas around urban areas. In this business, various elements of rural culture, such as architecture, business, and economic activities of humans, clothing, and food are provided to the people of agricultural areas through this tourism business, or people from urban areas visit such tourist centres and enjoy rural culture. India is unified in terms of its natural and social diversity. In India, primary business is presented first, followed by secondary, tertiary, and tertiary businesses. One of them is the tourism industry, which is a business that is developing in modern times, but the process of tourism has existed in India since ancient times. Many countries such as India have abundant natural resources, and tourism development businesses run on these natural resources. In India, various tourism centers, such as natural and human resources, religious tourism centers, heritage sites, natural places, sanctuaries, and wildlife have been developed. Despite this, some tourist centers are far behind in terms of development. In short, such tourist centers have huge potential for development. However, due to a lack of facilities or publicity, such tourist centers have not been developed. In short, for the development of any tourist center, the attraction of that tourist center is not an important factor, but the various facilities available at that tourist center also affect tourism development. Although many factors affect tourism development, the two most important ones that contribute to the development of the tourism industry are natural and human resources. Both the factors are interdependent.

The main objective of this research is to evaluate the level of tourism development in Chhatrapati Sambhajinagar district from this point of view. For this, the Z-score method was adopted to evaluate the tourist center. In short, the Z-score method was used to determine the level of tourism development.

Study Area:

The Chhatrapati Sambhajinagar District is culturally and historically unique. The geographical location of this district is between 19° to 20° North latitude and 74° to 76° East longitude. This district mainly includes the Godavari River Basin, Tapi, and some parts of the Purva River Basin. The total geographical area of this district is 10100 square kilometres and three main mountain ranges, namely Antur, Abbasgad, and Satonda. In addition, all these natural factors have an impact on natural, historical, cultural, and agro-tourism. According to the 2011 census, the population of this district is 3701282 and with a population density of 770, literacy of 61.15%, and sex ratio of 924.

Map no 01: Location map in Study area
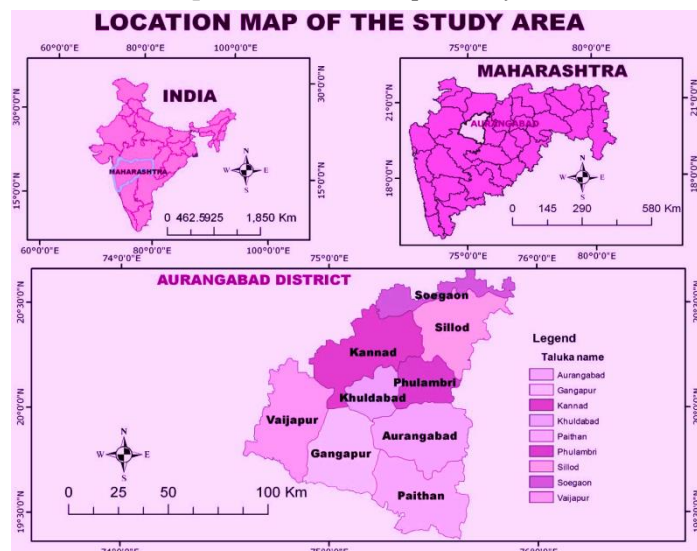
Aims and Objective:

The main objective of this research was to study tourist canters in Chhatrapati Sambhajinagar. To achieve this goal, the following objectives were adopted.
1. Studying the facilities at tourist centers in the study area.
2. To study the level of tourism development using the Z-score based on the facilities in the tourist center.

Research Methodology:

Primary and secondary data collection methods were used to conduct this research. In the primary data collection, data were collected from selected tourist destinations in the study area using questionnaires. For secondary data collection, information was collected from various sources such as websites, research papers, and reference books. The primary data were collected and classified using statistical methods. The Z-score statistical method was used to process primary data.

The Z method was used to fulfil the aims and objectives of the research.

$$Z = \frac{(X - \mu)}{\sigma}$$

Where,

If X is a random variable from a normal distribution with mean (μ) and standard deviation (σ)

Result:

In this study, the total number of religious tourism centers in the area was 22. The levels of 14 different facilities available at these 22 tourist centers were considered. In this context, the four 4 A factors facilities (Accommodation, Accessibility, Attractiveness and Amenities) are important factors affecting the development of tourism. The other 10 factors were considered, mainly information centers, shopping facilities, medical facilities, food facilities, drinking water, parking facilities, cleanliness, security, and tourist guides. These 14 factors were evaluated by assigning 10 points each, and the average value X was calculated as the number of points out of the ten points given to each parameter by the tourists. Table No. 01 shows the results of the analysis of the entire Z-score. To determine the level of development of various tourist destinations, the limiting value of the deviation of various factors for the Z-score is first determined, and the level of development has been determined in four categories: developed, medium developed, developing, and underdeveloped.
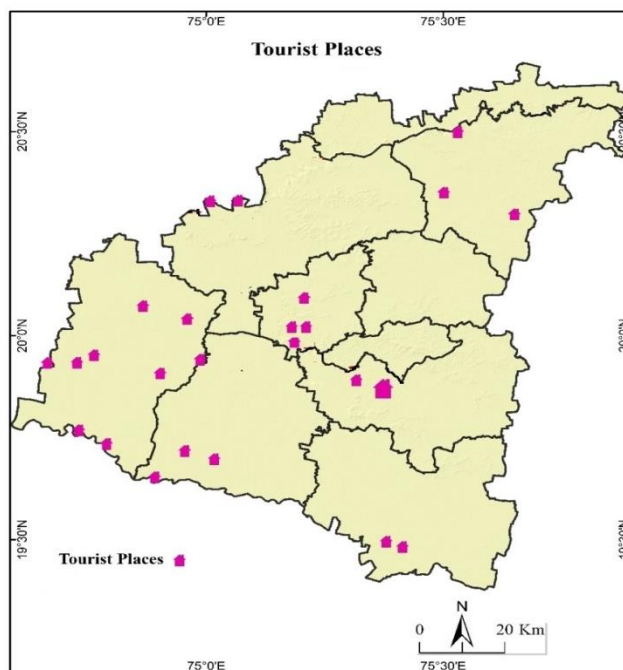
Table no 1: Z score of tourist Places in Chhatrapati Sambhajinagar District

Sr. No.	Name of Tourist Place	Average Score (x)	x-u	Z Score (x-u/ σ)
1.	Ajanta Caves	9.57	3.14	4.56
2.	Basaltic Rock History Museum	7.14	0.71	1.03
3.	Bibika Maqbara	8.93	2.50	3.62
4.	Consort of Aurangzeb's sons	5.93	-0.50	-0.73
5.	Daulatabad Fort	7.29	0.85	1.24
6.	Dnyaneshwar Garden Paithan	7.36	0.93	1.34
7.	Dr. Babasaheb Marathwada University	8.14	1.71	2.48
8.	Ellora Caves	9.50	3.07	4.45
9.	Gautala Sanctuary	6.50	0.07	0.10
10.	Grishneshwar Temple	7.71	1.28	1.86
11.	GulMandi	5.50	-0.93	-1.35
12.	Jayakwadi Dam	3.21	-3.22	-4.67
13.	Mhaismal	6.79	0.35	0.51
14.	Panchakki	5.29	-1.15	-1.66
15.	Patana Devi	4.71	-1.72	-2.49
16.	Pithalkora Caves	7.00	0.57	0.82
17.	Shivaji Museum	7.64	1.21	1.76
18.	Siddharth Garden	8.57	2.14	3.11
19.	Sonehri Mahal	5.29	-1.15	-1.66
20.	State Archaeology Museum	7.57	1.14	1.65
21.	The Tomb of Emperor Aurangzeb	5.86	-0.57	-0.83
22.	Varad Ganesh Temple	6.07	-0.36	-0.52
	∑ Ẍ (Average)	**6.43**		**0.66**
	∑ σ (Standard Deviation)	**0.69**		**2.25**

Sources: Calculated by Researcher

According to the statistical method of Z score, out of the twenty-seven tourist centers in the study area, three are fully developed religious tourism centers, four are moderately developed, 12 are developing religious tourism centers and eight are underdeveloped religious tourism centers, as shown in detail in Table No. 02. The level of development of the tourist destination shown in this table is mainly based on the opinions of the tourists who have visited it and on the 14 factors that have been considered. The development was calculated based on this statistical information.

Map no 02: Distributions of religious tourism Places in Chhatrapati Sambhajinagar District

Table no 02: level of Development of religious tourism Places in Chhatrapati Sambhajinagar District (Based on Z score)

Sr. No.	Development Class	Name of Tourist Places	Number of Tourist Places
1	Develop	Ajanta Caves, Ellora Caves, Bibika Maqbara, Siddharth Garden	4
2	Moderately Developed	Grishneshwar Temple, State Archaeology Museum, Basaltic Rock History Museum, Pithalkora Caves, Daulatabad Fort, Dnyaneshwar Garden Paithan, Shivaji Museum Dr. Babasaheb Marathwada University	8
3	Developing	Gul Mandi, The Tomb of Emperor Aurangzeb, Consort of Aurangzeb's sons, Mhaismal, Gautala Sanctuary, Varad Ganesh Temple	6
4	Unexplored	Panchakki, Sonehri Mahal, Jayakwadi Dam, Patana Devi	4

Sources: Calculated by Researcher

The developed class includes a total of four tourist centers, mainly Ajanta Caves, Ellora Caves, Bibika Maqbara, and Siddharth Garden. These development levels are mainly based on the 14 factors that have been considered. There are eight moderately developed tourist centers in the study area. These include the Pithalkora Caves, Daulatabad Fort, Dnyaneshwar Garden Paithan, Grishneshwar Temple, State Archaeology Museum, Basaltic Rock History Museum, Shivaji Museum, and Dr. Babasaheb Marathwada University. The development level mainly includes six tourist places: Gul Mandi, the Tomb of Emperor Aurangzeb, Consort of Aurangzeb's sons, Mhaismal, Gautala Sanctuary, and Varad Ganesh Temple. My number of developing Tourist Places is four, namely Panchakki, Sonehri Mahal, Jayakwadi Dam, and Patana Devi.

Conclusion:

In places where tourist centers are deprived of development, it is necessary to provide or develop four 4 A factors, which are the high potential components. It is necessary to adopt developmental strategies and develop new development policies and infrastructure facilities, leaving tourism centers that are moderately developed. For this, it is necessary to develop these centers by taking the initiative in coordination with local organizations, trusts, the government, and local people. This can provide employment to all local people.

Conflicts of interest
The authors declare that there are no conflicts of interest regarding the publication of this paper.

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