Assessing Tourism Potential in Sivasagar District, Assam, India

Ramen Borah¹ and M.A. Ahmed²

¹M. Tech Scholar, Department of Civil Engineering National Institute of Technology, Silchar, Assam ²Department of Civil Engineering National Institute of Technology, Silchar, Assam E-mail: ¹ramenborah@gmail.com, ²ali.mokaddes@gmail.com

Abstract—Tourism has major contribution in sustainable development, economic upliftment and social welfares. Tourism has a direct impact on the national revenue for all touristic countries, it creates work opportunities, industries, and several investments to serve and raise nation's performance and cultures. In the recent years tourism has emerged as a major part of the Indian economy contributing largely to the foreign exchange earnings and creating significant employment opportunities. Sivasagar is one of the district of Assam, India with a great potential for tourism. It remained the seat of Ahom power for approx. six centuries. It is well known for Ahom palaces and monuments. There are many historical temples and tanks, constructed during the Ahom reign. Sivasagar is rich in historical, religious and heritage sites. Despite the fact of great potential for tourism, the city lacks the planning for tourism and its supporting infrastructure. This paper tries to assess the tourism potential and existing situation of tourist infrastructure and recommend practical approaches to improve the tourism in the city. 'Weighed Sum Method' is used quantify the tourism potential in Sivasagar district. It is a popular multi-criteria decision making tool. This method opts for social, physical and environmental attributes and quantifies them through ranking and scaling systems. For this purpose, questionnaire survey with tourists, private businessmen, local government officer and public opinion is considered. The tourism potential has been quantified based on individual spots.

1. INTRODUCTION

Tourism is travel for recreation, leisure, religious, family or business purposes, usually for a limited duration. Tourism is commonly associated with international travel, but may also refer to travel to another place within the same country. The World Tourism Organization defines tourists as people "traveling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes". Tourism is considered as 'an activity essential to the life of nations because of its direct effects on social, cultural, educational and economic sectors of national societies and on their international relations' [1]. Tourism boosts up economic activities through its multiplier effects and exploits local cultural and natural specialties in a positive way [2]. Studies prove that an investment of 1 million rupees in tourism industry creates 47.9 jobs as compared to 44 in agriculture, 13.8 in transport and

only 2 in railways. However, India's contribution to world tourism is less than 1 percent but it is India's largest domestic generator of foreign exchange (Smith, 1992) [3].

The Planning Commission of India has declared tourism as the second largest sector in the country in providing employment opportunities for low-skilled and semi-skilled workers. Domestic tourism contributes about 75% of tourism economy. Thus in 12th five-year plan (2012-2017) tourism has been marked as a dawn of new era for social integration and economic development [4]. In 2008, the sector contributed 200 billion US dollars which is expected to increase to 375.5 US dollars in 2018 at a 9.4% annual growth rate [5].

2. CASE STUDY: SIVASAGAR DISTRICT

A. Overview of the District

Sivasagar district formerly known as Sibsagar is one of the 27 districts of Assam state in north-eastern India. Sivasagar city is the administrative headquarters of this district. It is known for its rich and diverse biodiversity. The district is bounded by the Brahmaputra River on the north, the Nagaland on the south, the Dihing River on the east and the Jhanji River on the west. The Sivasagar District is situated between 94⁰.25" and 95°.25" Longitude East and 21°.45" and 27°15" Latitude North. It has elevation of 86.6 meter above the main sea level. District Head Quarter Sivasagar is 363 Km away (east) from the capital Dispur. The total geographical area of the District is 2668.00 Sq. Km as per 2011 census, out of which 2637.85 Sq. km covered by rural area and 30.15 sq. km covered by urban area. Sivasagar district comprises of three Sub-divisions - Sivasagar, Nazira and Charaideo. Geographical area of Sivasagar, Nazira and Charaideo Sub-division are 999.55, 441.65 and 1226.80 Sq. km respectively. 50.65 % of the total geographical area is under agricultural land. The district is served my one National Highway (NH-37) and other major district roads. It is well connected by railways too. Eastern Railway route length of 183 KM in the district is covered by Board Gauge. The district is well known for its glorious history. Oil and Tea industries are the major industries in the district.

B. Historical perspective

Sivasagar was the capital of Ahoms who ruled Assam for about six hundred years till the advent of the British. The first ahom king, Sukapha, migrating from Mong-mao or Mong-Mao Ling (South-west Yunnan province of China) had established his first capital at Charaideo in 1261 A.D. Later on, Sudangpha changed the capital to Charaguya, in 1403 A.D., from where Suklengmung shifted to Garhgaon. Sukampha again shifted his capital to Salaguri and finally Rudra Singha founded the fifth capical at Rangpur on the bank of river Dikhow. The Sivasagar district encompasses the above cited places where vestiges of Ahoms are located. There is a very big tank in this town called Sivasagar dug by the Ahom king Siva Singha more than 250 years ago. The town and its surroundings are dotted with the ruins of forts and palaces and tanks depicting the glory of a powerful kingdom. The tank Sivasagar covers 51.91 hector of area. On its bank there stand three temples (Dol) viz. the Siva Dol, Vishnu Dol and the Devi Dol built by queen Ambika, wife of Siva Singha in 1734. The Siva dol is believed to be the second highest Siva temple in India. Apart from it, the Talatal Ghar (multistoried palace), a seven storied palace with three storied below the ground level, is an architectural marvel of Ahom period. It was built by Ahom King Rudra Singha (1696-1714) and lies at a distance of only 3.5 km west of Sivasagar town. Ranghar, a two storied oval shaped pavilion is located near Talatal Ghar and was used by Ahom royalties to watch elephant and buffalo fight and other sports event. The name of the District appears to have originated from the name of the huge tank 'Sivasagar'. Originally the name of the area was known as Rangpur. Other important heritage sites are Joysagar tank, the Gargaon palace, group of maidams at Charaideo etc. Joysagar tank is the largest tank in India and perhaps the biggest man-made tank in Asia comprising an area of 318 acres of land including its four banks, out of which 155 acres, is filled with crystal clear water.

C. Existing Tourist Areas

Sivasagar is mainly characterized by historic and heritage tourist spots. Archaeological Survey of India (ASI) protects and maintains most of the historical monuments situated in this district. About 18 monuments are taken under ASI, Govt. of India out of which five are ticketed monuments. A good sum of revenue is collected from these spots. Directorate of Archaeology, Govt. of Assam also undertakes about 22 monuments constructed during Ahom reign. Other than the ahom monuments there is scope of religious and natural tourism in this district. Ajanpir Dargah, situated at 22 Km away from Sivasagar at Saraguri Chapori on the river Dikhow is one of them. This Dargah is visited by people of all religion and considered to be very sacred place. Sivasagar district is home to the Panidihing Wildlife Sanctuary, with an area of 34 km². It is 22 km away from Sivasagar town. This protected area was established as a Bird Sanctuary in August 1999 by the Government of Assam. Apart from the above mentioned spots, Sivasagar attracts a large no of local tourists during various festivals and fairs occurred in different seasons. The major tourist spots, their location are explained in **Table 1** and **Fig. 1**.

D. Current Tourism Scenario

Sivasagar district is a major tourist destination in the state of Assam for a long time. Lakhs of local, regional and a good number of foreign tourists visit this destination throughout the year. The touring initiative is mainly personal or private operators. The government also takes some initiative from time to time. Recently, the Sivasagar administration has identified 511 new historical sites in the district as prepared by a special project team of Sivasagar Green Mission (an initiative of the administration to boost tourism). But the district still lacks systematic tourism planning. With systematic tourism planning, the city can emerge as an important tourist destination as it has resource potential to domestic as well as foreign tourists. Therefore proper strategies are to be prepared for development of tourism industry.

Name of Spot	Location	Year of Construction
Ranghar	Near Joysagar, 3.5 km from Sivasagar town	1744-1757 AD
Talatal Ghar	Near Joysagar, 3.5 km from Sivasagar town	1696-1714 AD
Gargaon Palace	Gargaon, 13 km East of the Sivasagar town	1752 AD



Fig. 1: Major Tourist Spots of Sivasagar District

3. METHODOLOGY

Multi-criteria decision making tools are widely used by researchers and decision makers for assessing the tourism potential of a tourist destination. Some commonly used tools used in this regard are Analytic Hierarchy Process (AHP), Value Analysis (VA), Multi- attribute Utility Theory (MAUT), Superiority and Inferiority Ranking Method (SIR), Weighted Product Model (WPM), Weighted Sum Model (WSM). In this study, the **Weighed Sum Method (WSM)** has been used for assessing the tourism potential. Four steps following the methodology of Mamun and Mitra, (2012) were performed to carry out the study. The steps are explained below.

Step 1: Level-1 Attributes and Weight (Wi) Assignment

Different researches show that the performance in tourism depends on the quality of service provided as well as the socio-economic and socio-cultural background of the tourists. Three broad aspects namely **physical**, **social** and **environmental** have been considered as level-1 attributes in connection with assessing tourism potential. Depending upon the regional setting and cluster of tourist areas the weight values of each of the three aspects, mentioned above, may be assigned. The assignment of weights was worked through expert opinion survey, tourist survey, service providers' interview or experience. The weight value for a certain parameter may be considered null (i.e. ignored) if they are similar throughout the zone. So, three different weights are considered (W_p for physical, W_s for social and W_e for environmental) in the first stage.

Step 2: Level-2 Attributes and Weight (w_j) Assignment

Each of level-1 aspect consists of set of variables to be considered as level-2 attributes. These sets are explained hereunder.

- (1) Physical (W_p) aspects include geographic terrain, regional connectivity and vehicular accessibility, bottlenecks in accessibility, versatility in accommodation system, guide and tourist information factors, local souvenirs, tele-communication systems, availability of quality and special foods, parking and other recreational facilities.
- (2) Social (W_s) factors include existing tourist influx for existing tourist spots only), intensity of fairs and festivals, timing to visit a spot, duration of stay, compatibility of the spot with surrounding landuse, safety and security for the visitors, probability of social crimes, behavioral aspects of the operators or service providers etc.
- (3) Environmental (W_e) aspects are probability of natural calamity during a specific time window, natural and anthropogenic threat, hazardous landuse, quality of air and water and pollution etc.

Inclusion or exemption of any attribute may vary from case to case. For example, if there are two railway stations in a larger region, different spots may obtain different accessibility index, hence, the existence and level of service for the railway stations may be included as an analyzing factor. And if there is no probability of social crimes in any tourist spot or group of spots, the attribute may be ignored to simplify the computation.

Now, every respondent is asked to rank the attributes (1, 2, 3, ..., n) for each group/set separately according to their preferences. The ranking data is arranged in matrices

separately for each set. A hypothetical sample has been provided for conceptualization of the method. Let us assume, there are 4 attributes for a group and 50 respondents have opined their preferences. So, every respondent will rank the parameters as 1, 2, 3 and 4.

Table 2: Sample Example showing Ranking Method

Attributes	Rank 1	Rank 2	Rank 3	Rank 4	Total
Attribute 1	20	11	9	10	50
Attribute 2	9	18	14	9	50
Attribute 3	11	10	12	17	50
Attribute 4	10	10	21	9	50

Name of Spot	Location	Year of
		Construction
Sivasagar Tank	At Sivasagar town	1734 AD
and Temples		
Charaideo	Foothills of Charaideo	
Moidam	Parbat, 28 km East of	
	Sivasagar town	
Joysagar tank	Joysagar, 4 km from	1638 AD
and Temples	Sivasagar town	
Ghanasyam	In the South Western bank	Not Available
Temple	of Joysagar Tank	
Namdang Stone	Near Gaurisagar on river	1703 AD
Bridge	Namdang, 12 km from	
	Sivasagar	
Ajan Pir Dargah	Saraguri Chapari 22 km	
Sarif	from Sivasagar	
Panidihing	22 km away from Sivasagar	
Wildlife	town	
Sanctuary		

For each attribute, the sum of all ranks will be 50. Now, the columns indicate the comparative preferences for the ranks. **Table 2** explains a sample example for the ranking method. Here, highest 20 respondents have voted attribute 1 as rank 1. Attribute 2 gets the maximum vote for rank-2, attribute 4 as rank-3 and attribute 3 as rank-4. The result indicates that the weight (w_j) for attribute 1 should be maximum, followed by 2, 4 and 3. So, the values are prescribed reverse of their ranks as 4, 3, 2 and 1 respectively. Sum of these numbers is 10. After normalization (i.e. the sum of all weights will be 1), attribute 1 will obtain 4/10 i.e. 0.4, attribute 3 as 0.3, attribute 2 as 0.2 and attribute 4 as 0.1.

Step 3: Intra-Attribute Scaling (s_j)

Level of quality or service for each attribute may not be similar for all the spots. Depending upon variations in quality / quantity, each attribute is scaled in a 5-point or 3-point scaling as required. These scales are related to grades from 1 -5 or 1 - 3 based on logical interpretation and quantification of various levels. Hence, the step 1 and 2 indicates a global approach to be used for all parameters and step 3 is a local approach based

on different variations or ranges set logically. For scaling, '1' refers to the worst/weakest quality and '5' indicates the best/strongest quality. For computation, the lowest value is considered as 0.2 followed by 0.4, 0.6, 0.8 and the highest being 1. A proper scaling sets up a common platform for both quantitative and qualitative parameters.

Step 4: Computation of Aggregate Potential Value

Potential value of a tourist spot is finally aggregated in an additive way. The expression is as follows:

Total Potential (V) = Potential Value of Physical Aspect (V_p) + Potential Value of Social Aspect (V_s) + Potential value of Environmental aspect (V_e)

 $\begin{array}{l} \text{Or, Total Potential (V)} = W_p ^* [w_1 s_1 + w_2 s_2 + \ldots + w_n s_n] \\ + W_s ^* [w_1 s_1 + w_2 s_2 + \ldots + w_n s_n] \\ \text{social} + We ^* [w_1 s_1 + w_2 s_2 + \ldots + w_n s_n] \\ \text{environmental} \end{array}$

Or, **Potential** (V) = $\sum \mathbf{W}_i * [\sum \mathbf{w}_j \mathbf{s}_j]$

Where,

 W_i is the weight of Parameter level 1 for ith attribute, w_j is weight of parameter level 2 for jth attribute and s_j is the scaling grade for jth attribute of level 2. Value of W_i and w_j will range from 0-1 and s_j has 5 different values (0.2, 0.4, 0.6, 0.8 and 1).

Major convenience of the equation is that it gives disaggregate values of three potential items separately along with a wholesome measure. All of the potential values will range from 0-1. Lower values indicate weakness compared to strength. The ultimate value works as an indicator for tourism potential.

4. RESULTS AND DISCUSSIONS

Result of Step 1: The study is carried out taking physical, social and environmental aspects. 91 respondents from public sectors, private sectors and tourist vising Sivasagar suggested their ranking on physical, social and environmental aspects as prescribed. As per opinion, weights (W_i) for physical, social and environmental aspects has been considered as **0.40**, **0.30** and **0.30** respectively.

Result of Step 2: The attributes under social, physical and environmental aspects were selected from a list from opinion survey. The social aspects include three attribute in the preference order of (1) Annual tourist influx (2) Frequency of fairs and festivals and (3) Average duration of stay.

Again from the opinion survey of 91 respondents, the physical aspects have been distributed over 6 parameters. The preference order is (1) Physical Accessibility/ Connectivity (2) Accommodation (3) Vehicular Accessibility (4) Tourist Information and Guide Service (5) Local Souvenirs and (6) Food and Market.

From the opinion survey of respondents, the environmental aspects had been distributed over 3 parameters. The preference

order was (1) Beautiful scenery (2) Site's landscaping and (3) Openness of the place. Table 3 explains the value of weights for the selected attributes.

Table 3: Weight of Attributes Level-2

	Attributes and Ranks	Weights									
Social Attributes											
Rank 1	Annual tourist influx	0.50 [3/6]*									
Rank 2	Frequency of fairs and festivals	0.33 [2/6]									
Rank 3	Average duration of stay	0.17 [1/6]									
* Cumulati	ve value: 1+2+3= 6										
Physical At	tributes										
Rank 1	Physical Accessibility/	0.28 [6/21]*									
	Connectivity										
Rank 2	Accommodation	0.24 [5/21]									
Rank 3	Vehicular Accessibility	0.19 [4/21]									
Rank 4	Tourist Information and Guide	0.14 [3/21]									
	Service										
Rank 5	Local Souvenirs	0.10 [2/21]									
Rank 6	Food and Market	0.05 [1/21]									
* Cumulati	ve value: 1+2+3+4+5+6= 21										
Environme	ntal Attributes										
Rank 1	Beautiful scenery	0.50 [3/6]*									
Rank 2	Site's landscaping	0.33 [2/6]									
Rank 3	Openness of the place	0.17 [1/6]									
* Cumulati	ve value: $1+2+3=6$										

Result of Step 3: A 5-point and/or 3-point scaling of each different attributes have been framed on the basis of appropriate logical interpretations to quantify the qualitative aspects. 1 refers to worst condition and 5 as the best. **Table 4** shows a sample scaling of a single parameter. A color range from black to white has been applied for 1- 5 scales respectively. For ease of computation, the values from 0.2 to 1.0 have been provided. For three attributes namely Food & Market, Souvenir and Accommodation, 3-point scaling has been used where the minimum value has been considered as 0.2 and the highest being 0.6.

Result of Step 4: Aggregate Potential Value of each tourist spot in Sivasagar district has been calculated based on the formula Potential $(V) = \sum W_i * [\sum w_j s_j]$. The adjusted formula is explained in the following steps:

Table 4: Interpretation of Scaling for a sample parameter

Attribute	1(0.2)	2(0.4)	3(0.6)	4(0.8)	5(1.0)
	Narrow	Narrow	Moderat	Wide	Wide
	Road,	Road,	e	road,	road,
	only	pedestria	pedestria road, vehi		vehicle
	pedestrian	n	vehicle	allowed	allowed
Connectivit	,	and	allowed,	and	and
у	no	vehicle,	bad	moderat	good
	vehicle,	bad	road	e	conditio
	bad road	condition	conditio	road	n
	condition		n	conditio	
				n	

- 1) Total Potential Value $V_T (\sum W_i^*[w_js_j]) = 0.30^*$ Potential value in Social Aspects $(V_s) + 0.40^*$ Potential value in Physical Aspects $(V_p) + 0.30^*$ Potential value in Environmental Aspects (V_e)
- 2) Potential Value in Social Aspects $V_s (\sum w_j s_j) = 0.5^*$ Grade in Tourist influx (S_1) + Grade in frequency of fairs and festivals (S_2) + Grade in Average duration of Stay (S_3)
- 3) Potential Value in Physical Aspects $V_p (\sum w_j p_j) = 0.28^*$ Grade in Connectivity (P₁) + 0.24* Grade in Accommodation (P₂) + 0.19* Grade in Vehicular Accessibility (P₃) + 0.14 Grade in Information and Guide (P₄) + 0.10* Grade in Souvenirs (P₅) + 0.05* Grade in Food and Market (P₆)
- 4) Potential Value in Environmental Aspects V∑(vjej)= 0.50*Grade in Beautiful Scenery (E₁) + 0.33* Grade in Site's Landscaping (E₂) + Grade in Openness of the palce (E₃)

Potential value of each tourist spot is furnished in **Table 5.** Each cell has been colored with specific code mentioned previously. As calculated, potential values of social (V_s) , physical (V_p) , environmental (V_e) and total (V_T) ranges from 0 to 1. **Table 5** explains the potentials.

Findings from the Table 5: The potential value of social aspects is highest at Sivasagar Tank and Temples (0.866) and lowest at Thowra dol (0.2) as from the table. Higher social values are obtained at Ranghar, Talatal Ghar, Charaideo and Gargaon Palace. Gaurisagar and Rudrasagar tank and templs exhibits lower social value due to less no of tourist influx as well as less frequency of fairs and festivals.

Table 5: Potential Values for Tourist Spots of Sivasagar District

Spots	S	S	S	Vs	Р	Р	P	Р	P	P	V	Е	Е	Е	V	V
	1	2	3		1	2	3	4	5	6	р	1	2	3	e	Т
Rangh	1	0.	0.	0.	1	0.	0.	1	0.	0.	0.	0	0	0	0.	0.7
ar		6	6	8		4	8		4	2	71				7	45
											8	8	6	6		4
Talatal	1	0.	0.	0.	1	0.	0.	1	0.	0.	0.	0	0	0	0.	0.7
Ghar		4	6	73		4	6		4	2	68				73	17
				4								8	6	8	4	8
Gargao	0.	0.	0.	0.	0.	0.	0.	1	0.	0.	0.	0	0	0	0.	0.6
n	8	6	4	66	8	2	6		4	2	57				7	49
Palace				6							6	8	6	6		2
Sivasa	1	0.	0.	0.	1	0.	1	1	0.	0.	0.	0	0	0	0.	0.8
gar		8	6	86		6			4	6	82				7	03
Tank				6							4	8	6	6		6
and																
Templ																
es																
Charai	0.	0.	0.	0.	0.	0.	0.	1	0.	0.	0.	0	1	1	0.	0.7
deo	8	6	8	73	6	2	4		4	4	49				9	11
Moida				4							2	8				2
m																

Joysag	0.	0.	0.	0.	1	0.	0.	0.	0.	0.	0.	0	0	0	0.	0.6
ar tank	8	4	4	6		2	6	8	2	4	59				76	48
and											4	8	8	6	6	
Templ																
es																
Gauris	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0	0	0	0.	0.4
agar	4	4	2	36	8	2	4	6	2	2	46				4	05
Tank				6	_			-			2	4	4	4		
and				-								-	-	-		
Templ																
es																
Rudras	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0	0	0	0.	0.3
agar	4	4	2	36	8	2	4	4	2	2	43				4	96
Tank	-		_	6	-	_	-	-	_	_	4	4	4	4	-	6
and				-							-	-	-	-		
Templ																
es																
Thowr	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0	0	0	0.	0.2
a dol	4	2	2	2	4	2	2	4	2	2	28	Ĩ	Ĩ		36	75
u uo1	· ·	-	-	-	· ·	-	-	· ·	-	-	4	4	4	2	6	10
Aian	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0	0	0	0.	0.5
Pir	6	6	6	6	8	2	6	8	4	4	55	Ŭ	Ŭ	Ŭ	63	97
Dargah	Ŭ	Ŭ	Ŭ	Ŭ	Ŭ	-	Ŭ	Ŭ			8	6	6	8	4	9
Sarif											0	0	0	0	-	
Panidi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5
hing	0. 6	0. 4	6	53	0. 6	$\frac{0}{2}$	0. 4	0. 6	<i>4</i>	2	42	Ů	Ů	0	8	81
Wildlif	0	-	0	4	0	2	-	0	-	2	6	8	8	8	0	4
P				-							0	0	0	0		-
Sanctu																
ary																
ary		1	1	1							1					

The potential value of physical aspect varies from 0.284 at Thowra dol up to 0.824 at Sivasagar tank and temples. The potential value from environmental aspect is found to be highest at Charaideo (0.9). Panidihing Wildlife Sanctuary is also an important destination from environmental aspect. The reliability of this method is proved by total potential value. The highest value is obtained from Sivasagar tank and temples situated at the heart of the city. Other famous destinations are Ranghar, Talatal Ghar and Charaideo maidams having potential value of 0.7454, 7178 and 7112 respectively. The destinations outskirts of the Sivasagar city have less potential value from physical aspects due to lack of physical infrastructure. Medium values are obtained from Ajan Pir Dargah, Panidihing Wildlife Sanctuary. Thowra dol exhibits the lowest value. There are many monuments outskirts of the city like Thowra dol which lacks planning for tourism. Proper tourism and advertisement can increase the tourism potential of such area.

5. CONCLUSION

Assessment of tourism potential is very important for Indian tourism. Assessment of tourism potential can be helpful in enhancing the performance of tourism. In this study tourism potential of various spots of Sivasagar district has been quantified. The areas of strength are rich cultural, historical and religious heritage, beautiful places and diverse nature of different spots. The beautiful Ahom monuments are the main attraction for tourist in this district. The areas of weaknesses are lack of tourism infrastructure and services, weak management of tourist spots and lack of tourist information. Thus to utilize fully the tourist potential at Sivasagar district for sustainable development and for the economic upliftment of its inhabitants, promotional activities such as tourism fairs and festivals, cultural events should be organized at regular interval and proper coordination between different government and private organization related to tourism should be established.

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