

# Soft System Methodology in Sustainable Destination Management : A Study of Andaman Islands in India

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## Abstract

Tourism in island destinations needs extra planning and efforts to be economical, cultural, and environmental friendly as compared to mainland destinations. Sustainable tourism development is the key to this all-round approach towards tourism activities performed in the islands. This study aimed at identifying the economic, environmental, and social factors that are being affected due to development in tourism in the Andaman Islands, India by using the Soft System Methodology (SSM). The study involves assessing the challenges faced by the Andaman Islands, developing a conceptual model and implementing the model on ground for carrying out organized and sustainable entrepreneurship practices in these islands. The SSM approach is said to be successful in terms of reducing the negative impacts of any phenomenon and the implementation of this approach was rarely seen in the field of island destination management which was the major research gap found for the study. Using SSM, it was found that the administration of the islands lacked in practicing of cultural and environmental friendly tourism in the islands. The study also found that the major chunk of benefits go to foreign investors and not to local entrepreneurs. The study provides a better understanding of the impact of tourism on the island community and its environment, and measures to mitigate those impacts.

**Keywords :** Andaman and Nicobar islands, destination management, island tourism, Soft System

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Destination management has always been a major link between introducing tourism activities in a destination and providing maximum benefits to the local community. A sustainable way of managing destinations would entail planned activities keeping in mind economic viability along with respecting the environmental and cultural aspects of the destination. In this growing age of competition, every destination along with managing its resources has a pressure of positioning its products to build its image by providing them character and personality (Sainaghi, 2006). Here is where the task of destination management for its stakeholders becomes a tedious mission. When it comes to island destinations, the task becomes even more complicated. The present study aims at addressing hurdles coming in the way of management of island destinations in a sustainable and digital way.

The study area for the present study is an island destination as the natural and the cultural setting of island destinations are vulnerable and sensitive as compared to the mainland destinations (Brunt & Courtney, 1999 ; Sharpley, 2003). Also, tourism activities grow on a much faster rate in island destinations, and as a result the rate of development in these destinations is faster (Carlsen, 2006; Lim & Cooper, 2009). For this reason, it becomes the need of the hour to identify the challenges faced by island destinations in terms of economic, social, and environmental aspects.

The present study revolves around identifying the major economic, social, and environmental factors that are affected due to the development processes that takes place in the islands in order to increase the visitors footfalls. Along with concentrating on economic development, it is necessary for the welfare of destinations for conserving the cultural and natural set up. The Andaman and Nicobar Islands in India are a vulnerable group of islands which face various challenges of contemporary times related to economic development (Reddy, 2009), environmental

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vulnerabilities (Andrews & Vaughan, 2005 ; Jacobs & Willson, 2012 ; Reddy, Shaw, & Williams, 2006), infrastructure development (Andrew & Sankaran, 2002 ; Jacobs & Willson, 2012, Reddy, 2009), and also issues related to sanitation of tourists spots. Development of tourism in any destinations brings economic advantages but if the development is unplanned, the cost has to be paid by the environment and the local community. The Andaman and Nicobar group of islands are one such example of developing island destinations which are growing in terms of tourism and hence, need special attention for minimizing the negative impacts of tourism development. Therefore, this study aimed at identifying the economic, environmental, and social factors impacted due to tourism development by using soft system methodology.

## **Systems Approach and Identification of Impact on Island Destinations**

Schianetz and Kavanagh (2008) discussed a new methodology for the assessment of sustainability of tourism destinations by using a systematic indicator system, its result was that tourism destinations needed to be studied as complex adaptive systems. Also, sustainability indicators systems need to be applied in the context of adaptive management approach. A similar study used an open soft systems model to clarify the differing significance of the initiative for selected stakeholder groups in Canterbury City Centre with interest in the city, its society, economy, environment, and ecology (Laws & Le Pelley, 2000).

Pratt (2015) assessed the impact of tourism on seven SIDS economies namely, American Samos, Fiji, Jamaica, Mauritius, Maldives, Aruba, and Seychelles using the input output analysis, linkage analysis, and static computable general equilibrium model. The problem faced by the researcher was the issue of availability of adequate data in the small island nations.

The social and cultural impacts measured two different scenarios of the society, where the former measured the impact on the quality of life of the people and was seen as development and changes in the short run, whereas the latter were changes in the long run which impacted the cultural values and practices (Brunt & Courtney, 1999 ; Sharpley, 2003). It is not necessary to have an encounter for the social or cultural impact to take place, the look or behavior of the outsider can impact the local community in terms of its social setup.

The environmental impact on the destinations is based on quantification of air pollution, water pollution, soil erosion, and negative effects on the environment (Green, 1989). Environmental Impact Assessment (EIA) is a tool which is used to calculate the impacts of new projects, and policies before their implementation. The tool helped policy makers to understand how to proceed with the construction of implementation of the plan that posed minimum negative effects on the environment.

The EIA has been criticized by many researchers. The EIA is a costly tool to find out the impact on the environment for any destination where it only gives the impact on the environment in that particular place, and does not take into account transportation or other costs for reaching that place. Moreover, it is assessed before the project actually starts which does not give an accurate idea of how the project will be carried out.

Another more accurate method used to test the impact of tourism on the environment is the *ecological footprint*. It is defined as, "the area biologically productive, land, and water required to produce the resources consumed, and assimilate the waste generated by humans under the predominant and management production practices in any given year" (Wackernagel et al., 2002, p. 1).

In some destinations where the regeneration capacity of the environment is more and the population is less, for example Sweden, the ecological footprint limit is high and other destinations which are densely populated and have less greenery have low ecological footprint value. It is measured in 'ghost acres' per capita where ghost acre is the land equivalent in acres on how much food is needed to feed a nation (Lundberg, 2011).

The Andaman and Nicobar islands are considered to be the most picturesque islands in the India and are an emerging tourist destination. They are known for their high degree of endemic flora and fauna species and a large forest cover which needs to be preserved from the negative effects of tourism development (Chaudhry & Bairagi, 2011). Therefore, a number of researchers are working on these islands. Applying the systems approach for identifying the challenges in these islands is a new concept which is introduced in this research.

## **Research Gap and Research Problem**

Islands with their unique culture and biodiversity are one among some of the most susceptible pieces of land and are more prone to negative impacts of tourism development (Carlsen & Butler, 2011). Any unplanned tourism activity in the island destinations may lead to permanent destruction of the irreplaceable cultural and natural environment. Soft System Methodology (SSM) for island tourism destination management would provide an insight for appropriate identification of impacts posed on the natural and cultural environment, and on the local communities of the island destinations. Taking Andaman and Nicobar Islands as an example, the Soft System Methodology (SSM) for destination management is applied on these islands to identify the economic, environmental, and social factors that are being affected due to development in tourism in these islands.

The SSM, since its inception in 1980s has only been used by very few researches in the field of destination management, and is considered to be one of the best approaches for managing island destinations because it accommodates the economic, social, as well as environmental impacts on the natural and cultural environment of the islands (Carlsen, 1999). Moreover, no study has been conducted on tourism destination management and for assessing the impact of tourism development on the Andaman Islands using the SSM approach.

## **Objectives of the Study**

The present study focused on applying the SSM approach on Andaman Islands and aimed to identify the economic, environmental, and social factors that are being affected due to development of tourism in these islands. SSM is a seven stage methodology, where in the first stage and second stages, problems arising due to tourism are identified by collecting information through observation and informal interviews and a structured questionnaire. The third stage focuses on creating an idealized view of how a pertinent system should exist. A conceptual model is formed in stage four according to the root definition. Stage five compares the real life problem with the conceptual model. At stage six, desired steps are taken and stage seven is the final stage for implementation of the changes (Checkland, 2000). This seven stage methodology was used in the study for destination management provides a clear understanding of planning and management of the destination.

## **Research Methodology**

The Andaman and Nicobar islands are a diverse set of archipelago in the Bay of Bengal in terms of its biodiversity and its unique culture. This cluster of 572 islands accommodates 2,200 varieties of plants out of which 200 are endemic and 1,300 are found nowhere in the Indian mainland (Gautam, 2005). Apart from its natural diversity, it is the home for some of the most primitive tribes on earth which are a dynamic subject for anthropologists to crack the mystery of human existence and evolution. The increasing unplanned tourism activities in these islands are working towards destruction and loss of its biggest attractions (Jacobs & Willson, 2012). The SSM can help the islands reduce the negative impacts of inadvertent tourism activities being performed by destination managers.

The seven stage process of applying SSM in the islands was initiated in the month of December 2019 as it is considered the peak season in these islands. The study was focussed on the South Andaman district as it is the hub of tourism stakeholders and receives the maximum number of tourists compared to other districts. In stage one and two, the problems faced by the stakeholders directly and indirectly related to tourism in the islands were identified by using a questionnaire consisting of 10 constructs namely, infrastructure development, transportation and communication, sanitation, security, environmental vulnerabilities, cultural sensitivity, economic development, unexpected inclement weather conditions, traditional conceptualizations, and administration and management. The questionnaire was distributed to 140 respondents including the major stakeholders in the South Andaman district. These were the travel agents, recreational managers, transportation providers, and the local community that remains in frequent contact with the tourists. The major issues faced by stakeholders came out to be lack of basic infrastructure for tourists, poor accessibility, unorganized waste management, lack of sanitation in the

accommodations provided to tourists, threat to biodiversity of the islands, degrading local culture of the indigenous tribes, economic leakage, disturbance in schedules of visitors due to inclement weather conditions, and lack of professionalism in service providers.

In stage three, root definitions in the form of concise statements were created in order to perform the required action on the issues identified. This stage aimed at providing an idealized solution to the problem identified in stages one and two for further development of a conceptual model on the basis of root definitions created. The root definitions were constructed by considering the elements of CATWOE (Checkland, 1989) as illustrated in Table 1.

In the present study, as per the CATWOE analysis, the customers were identified as stakeholders of the tourism industry in the Andaman Islands which included local communities and tourists. The actors identified were public sector agencies who are the decision makers for the process of tourism development in the Andaman Islands along with private sector players and the other tourism protagonists. According to Checkland (1989), the core of the root definition process is the transformation step which clearly defines the input and transforms it into meaningful output.

In this study, the input came out to be both natural and human resources available in the Andaman Islands, which would be sustainably transformed to economically, culturally, and environmentally favourable tourism development initiatives. The Weltanschauung is considered to be the principle of Education of Sustainable Development (ESD)

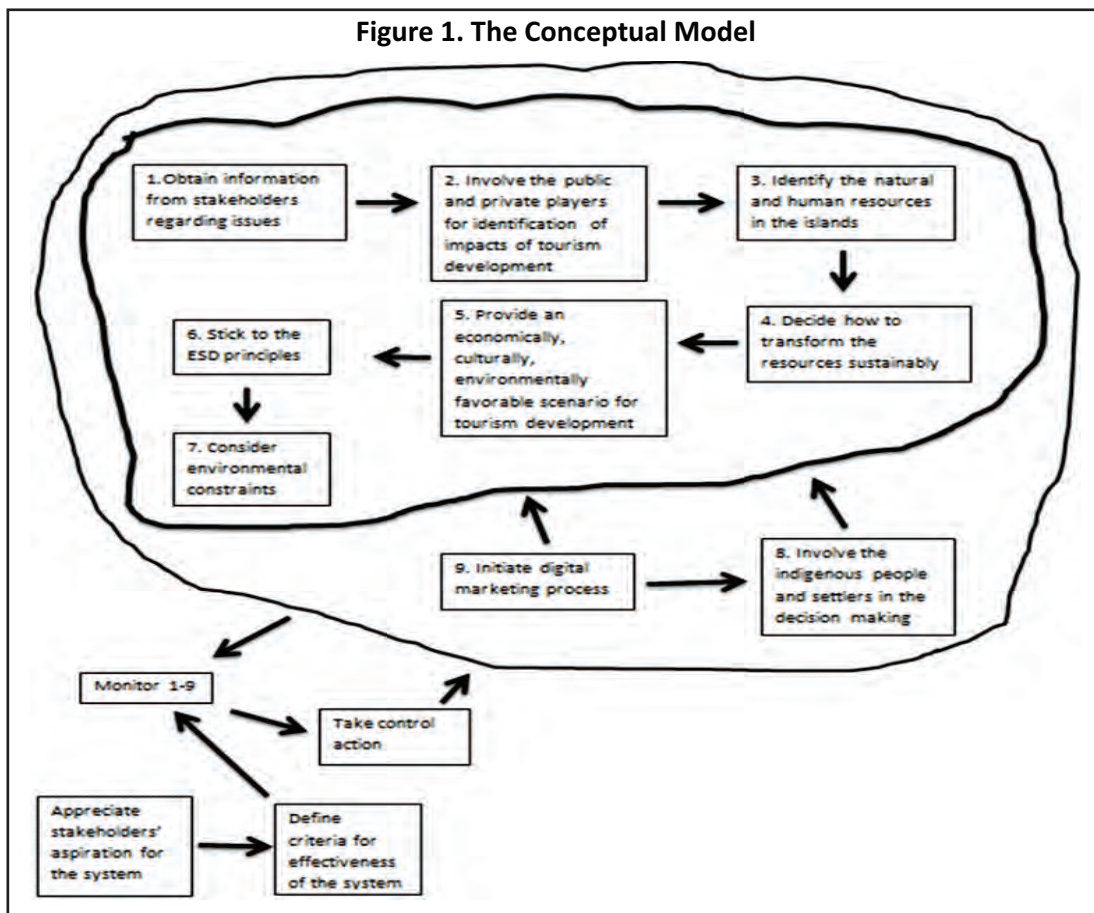
**Table 1. Formulation of Root Definitions**

Formulation of Root Definitions as per Checkland (1989).	CATWOE analysis by the author
C - Customers - who would be victims/beneficiaries of the purposeful activity?	C - Stakeholders in tourism industry (host communities and tourists)
A - Actors - who would do the activities?	A - Public and private sector agencies and other tourism players
T - Transformation Process - what is the purposeful activity expressed as Input → Transformation → Output	T - Natural and Human resources available in the islands → Transformation → Sustainable ↓ Economically, culturally, environmentally favorable tourism
W - Weltanschauung - What view of the world makes this definition meaningful?	W - Principle of ESD
O - Owner - Who could stop this activity?	O - Indigenous people and settlers
E - Environmental Constrains - What constraints in its environment does this system take as given?	E - <b>Natural Environmental Constraints:</b> land availability, marine resources availability, biodiversity pollution <b>Built environmental constraints:</b> Infrastructural issues, transportation and communication limitations, interruptions in other tourism activities
Root Definition : An island tourism destination management system in the light of sustainable transformation of natural and human resources aims at economically, culturally, environmentally favourable tourism development for the benefit of the environment and the stakeholders.	

(Carlsen, 1999). The ESD broadly identifies that the citizen should know and value key sustainable issues like climate change, misuse of energy, degrading biodiversity, and lack of accessibility (Venkataraman, 2009). The owners are the indigenous people originally owning the land in the Andaman Islands and also the settlers.

The environmental constraints in the Andaman Islands were divided into two parts. The natural environmental constraints including land availability, biodiversity pollution, and marine resources availability, and the built environment constraints recognized were infrastructural issues, transportation and communication limitations, and other interruptions in tourism related operations. Considering all the elements of the process, the root definition came out to be - 'An island tourism destination management system, which in the light of sustainable transformation of the natural and human resources aims at economically, culturally, environmentally favourable tourism development for the benefit of the environment and the stakeholders'.

Stage four involved the building of a conceptual model based on the root definitions created in the previous stage. The model thus created (Figure 1) represents a system which is expected to acclimatize and endure all kinds of changing environments.



## Findings of the Study

The next stages, five, six, and seven were the problem solving stages. In stage five, the model developed in the previous stage was compared to real-life situations and activities happening in the field. The differences between the model and real-life happenings were listed after conducting informal interviews with different stakeholders, and observing the situation in the field.

**(i)** It was seen that public and private players in the tourism industry in the Andaman islands were neither aware nor interested in finding out the positive and negative impacts of tourism development taking place in the islands. The development in these islands was not as planned as it is expected to be in such a vulnerable destination.

**(ii)** Moreover, the natural resources in these islands like the beaches, coral reefs, mangrove creeks, and reserve forest areas are treated casually. A very few beaches had the provision of proper disposal facilities and security services. The small boats and shipping services as well as recreational managers pay very less attention to conserving the corals and the marine environment.

**(iii)** Along with disastrous environmental degradation, the culture of the tribal people is also getting affected due to illegal interference of tourists and locals in their area.

**(iv)** Economically, tourism is providing benefits to the local community indulging in tourism activities, but economic leakage is also taking place as many outsiders are investing in the tourism business in the islands (Mbaiwa, 2005).

**(v)** A vital part of performing tourism operations that are lacking in the islands is the involvement of the local people and specially, the indigenous tribes in the decision making process.

**(vi)** A major problem of the islands management was lack of marketing of the islands, which created misleading conceptions in the visitor's mind.

The sixth and the seventh stage involved checking the feasibility and viability of the changes that were found out after comparing the ideal conceptual model of the study and the ground reality, and implementing them practically. It was analyzed that there must be some strict rules and principles imposed on private agencies by public administrators for carrying out adventure sports, and other recreational activities in the sensitive marine regions and reserve forest areas. This would simultaneously safeguard the environment and the cultures of the tribes. The norms should not only be applicable to the suppliers but also to the tourists visiting these sensitive areas. Also, it can be said that involvement of the local community in decision making and digital marketing of these islands would not only empower the community and reduce the amount of economic leakage happening in these islands, but also encourage the right visitors with right intentions. This would definitely lead the Andaman Islands towards sustainable destination management as a very important aspect of sustainable tourism is providing maximum benefit and authorization of tourism activities to the host communities.

## **Implications of the Study**

It is very important for all kinds of destinations to formulate and implement such policies which would regulate the impact of tourism development and minimize the negative effects on the natural and cultural environment of the destinations (Laws & Pelley, 2000). The SSM permits a better understanding of the reason behind the positive and negative impacts of tourism on the island destinations by investigating the challenges to tourism development in the destination and working towards overcoming them. This approach would not only help the Andaman islands but also other similar small island destinations in regulating their tourism development strategies and positioning them towards creation of a sustainable destination practicing sustainable tourism. Adopting this approach would also help the island destinations build their policies accordingly and cater to the needs of visitors without compromising with their sustainable principles. SSM is a naïve approach in the field of island tourism and has a long way to go for the betterment of destination management. There is a lot of scope for other destinations which are facing problems of being victims of negative impacts of tourism to adapt this approach and transform tourism to being cultural and environmental friendly.

## **Limitations of the Study**

As the primary data collection for the present study was undertaken during the peak season for tourist arrival, the stakeholders which included travel agents, recreational managers, and transportation providers were not able to provide enough time for the questionnaire and interview and contribute effectively. Some of the questionnaires were incomplete and not filled correctly. The local community and some of the stakeholders were not able to understand the language of the questionnaire, hence they had to be administered the same.

Also, the stakeholders were skeptical in providing data for the negative effect of tourism due to tourist arrivals as they thought it would affect their business. There was also paucity of time and finance for data collection in the study area.

## **Conclusion**

The Andaman and Nicobar group of islands are presently at the growing stage of tourism in island destinations. Probably, it is the right time for such destinations to ponder upon the planning and development for tourism activities which would be economically beneficial for the stakeholders, and at the same time equally beneficial for the natural and cultural environment of the place. An economical and environmental friendly planning at this stage of any destination would lead to a better future for tourism. It would not only be beneficial for the local communities, business personnel, but also for the government for framing long term tourism policies and inculcating the importance of tourism in the economic development and cultural well-being of the people.

The SSM approach is considered to be one of the best approaches to identify and understand the negative effects of tourism in any destination and further provide appropriate solutions for the same for better tourism future of the destination (Carlsen, 1999). The present study has tried to contribute to sustainable destination management of island destinations which would contribute to upgrading the standard of living of the host community along with increasing economic development and contributing to protection of culture and environment of the island destinations. This would also contribute to the awareness of the community, and also the tourists to follow a sustainable form of tourism and help develop better tourism for future generations.

## **Scope of Future Research**

The study was undertaken in the South Andaman district of Andaman and Nicobar islands, which can further be extended to the other districts of these islands. This approach can also contribute to minimizing the negative impacts of tourism activities of other vulnerable island destinations of the world, where the main source of economic development is tourism activities. The SSM approach can provide a great help and contribute in reduction of negative impact of tourism in these destinations, and enhance the positive impact of tourism by increasing employment for local communities, encouraging local entrepreneurs to invest in the tourism business, and make the stakeholders aware of the importance of protection of environment in the island destinations.

Apart from the island destinations, the SSM can also contribute to development of tourism with minimal negative impacts on other mainland and coastal destinations. This will encourage communities to get associated with tourism agencies, and also make them aware of the digital practices that can be introduced in the destinations as foundations for building smart tourism destinations.

The SSM approach can be the most beneficial for entrepreneurs in the tourism field to increase their business and also to attract people to get associated with the tourism industry for developing environmental friendly tourism practices.

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