Interpretive Structural Modelling of Green Tourism Enablers: An application in the Borobudur's Tourism Supply Chain Management

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ABSTRACT

This study aims to identify the hierarchical relationship among the significant enablers which is important to achieve the successful of the implementation of green tourism in Borobudur. This study use Interpretive Structural Modelling (ISM) as a method to establish a structure or hierarchical relationship among the enablers. This method starting with identify the element or critical success factor or enabler for green tourism and ending with the graph of the structural model. The process of identification the element or critical success factor or enabler was done by literature review and also by group problem-solving technique. Finally, this study found 16 key enablers for the success of implementation of the green tourism in Borobudur. Out of all these enablers, scarcity of resources has emerged as the most important factor for taking successful of implementation of green tourism. This implies that scarcity of resources is essential for taking all initiatives for implementation of green tourism..

Keywords: *Green Tourism; Borobudur; Enabler; Interpretive Structural Modelling*

1. Introduction

The tourism industry in Indonesia has been developed since 1900. Before 1990, the tourism industry was not managed well and professional. It was because, the government had focused on another priority program to increase the economic development, such as social welfare and agriculture program. But then, since 1992, the tourism activity become one of the priorities of the government since the government realizes that tourism activity can give the significant effect to the economy [1]. According to reference [2], tourism is usually seen as a significance actuator for the economic development, helping to build the economic prosperity of countries. There are some advantages from tourism, especially in terms of job creation and employment of individuals who provide tourism services [3]. The significance effect of tourism on the economy is given by its promise, direct and indirect, to the composition of the Gross Domestic Product (GDP). Generally, tourism has empowered the GDP overflow from the most developed economic status to those with a lower gross domestic product [4], [5]. According to a 2015 report released by the World Travel and Tourism Council, Indonesia's travel and tourism industry have produced, directly and indirectly, a total of $80 billion USD or approximately 9.3% of the country's GDP in 2014 [6]. Tourism is the third largest contributor to national income of Indonesia, after timber as the first contributor and textile as the second contributor [7]. Thus, Indonesia tourism is ranking 13th in the regional region and ranking 74th of 196 countries in the world [8].

Indonesia consists of 17,000 islands straddling the equator. Several tourism attractions which are spreading widely across the nation, from Sabang to Merauke can be used to invite tourists from the other countries. According to Presidential Regulation No. 50 of 2011, Indonesia has 50 National Tourism Destinations (NTDs), consisting of 88 Strategic Tourism Areas and 222 National Tourism Development Zones. Thus, Indonesia has at least 16 national tourism destinations that can be developed as international tourism destinations and one of them is Borobudur

temple compounds [9]. Borobudur temple compound is located in a rural area of Central Java, Indonesia. In 1991, Borobudur became a World Heritage Site, There are several temples in Borobudur area, such as the Borobudur Temple itself as the main temple, Mendut Temple, and Pawon Temple. Mendut and Pawon Tempe are smaller than Borobudur temple, but both of the temples have similarity in craftsmanship. The Borobudur temple compounds have been attracting large numbers of tourists [10]. In 2014, the number of visitor of Borobudur temple compound reached more than three million of international tourists and more than two hundred of domestic tourists, Based on this condition, according to Department of Culture and Tourism in Central Java, Borobudur temple can generate the highest income for Central Java Province; reached 95 IDR billion in 2015. Despite its prospect and status as one of the important destination of tourism in Central Java Province and also Indonesia, there is also negative opinions and evaluations coming from tourists towards Borobudur and some problems which are related to its status as world heritage. Several problems and difficulties is usually accompanying the development in tourism, for an example conflicting demands because of the scarcity of the resources (e.g. fresh water, beach access), loss of original cultures, problems related to supply of the energy supply and waste disposal both in touristic and ecologically sensitive areas [11]. This condition also found in Borobudur.

According to UNESCO World Heritage Committee and its advisory bodies, Borobudur has been the topic of serious concern in the recent years. This concern is based on continuing high levels of tourism at the site, with the poor state of the famous stone bas-reliefs at the monument itself, inadequate site management mechanism, and moreover, the infrequent communication among the local community and tourists who visit Borobudur [12]. Besides that, the use of accommodation around the Borobudur temple compounds may also be a source of negative impact to the environmental because of resource consumption (water and energy) and waste generation (waste water and solid waste). In this case, the accommodation around the Borobudur consumes a lot of energy for lighting, air conditioning, and hospitality. The accommodation around Borobudur also consume a lot of water for public toilets and offices, wetting the temple, commercial use of kiosks and restaurant, as well as watering the lawn when the dry season. According to literature, the rate of water consumption per tourist per day reached 84 L to 2000 L, or up to 3423 L per bedroom per day [13]. Thus, the result of preliminary survey showed that the volume of solid waste generated from the tourism activity in Borobudur temple compounds reached 3 to 5 container per day; in this case, one container consist of 4.5 to 5 meter cubic of solid waste. During the holiday, the volume of the solid waste increase until 9.6 containers per day. All of the phenomenon in Borobudur temple compounds indicated that the management often found difficulty in attracting the tourists in cultural heritage without damaging the sites [14]. So, to overcome this phenomenon, it seems that the development of Borobudur temple compounds must be using the green tourism concept for sustainable tourism practices.

Green tourism is the term used for sustainable tourism practices which take into consideration the mutual needs of the ecology and environment, local people, businesses enterprises and tourists itself. Green tourism allows us to draw a framework of management and development, for both now and in the future [15]. The term of green tourism can be applied to every practice of tourism that relates to the natural environment. The term of green tourism can also be applied to the cultural heritage of an area or that carry out green practice or good environmental management practice. There are three methods encompassed by which a practice of tourism would prevent or minimize the bad impact of their activity on the environment, i.e. the wise of using the resources such as raw materials, water, and energy; prevent pollution (air, land, and water); and protect and enhance the biodiversity [16].
Despite an important of green tourism concept for sustainable tourism practices in Borobudur, is imperative that studies should be conducted in identifying, understanding, and structuring the critical success factors in which can influence the success of implementation of green tourism. The study on critical success factors has been viewed as an important area to investigate in various sectors since in the past few decades and the study on critical success factors had been conducted in the several area, such as in area of general strategic planning and business management, telecommunications, networking, and, recently, in area of tourism planning and development [17]. Bender et al. [18] believed that key success factors referred to certain fields, situations, or variables which can significantly affect a degree of success through continuous maintenance and control. In this case, the critical success factor will be the key enabler to support green tourism and we need to establish the structure of hierarchy among the enablers. This study will utilize the Interpretive Structural Modelling (ISM) to establish a structure or hierarchical relationship among the enablers. Shortly, this study aims to use ISM to identify the hierarchical relationship among the significant enablers which is important to achieve the success of the implementation of green tourism in Borobudur.

2. Literature Review

2.1 Tourism Supply Chain Management

Much of the supply chain literature emphases on the manufacturing industry, with little consideration paid to the service sector, especially to the tourism industry. According to reference [10], tourism supply chain (TSC) can be defined a network of tourism organizations involved in different activities ranging from the supply of different components of tourism products/services such as flights and accommodation to

the distribution and marketing of the final tourism product at a specific tourism destination, and involves a wide range of participants in both the private and public sectors. Generally, from the upstream to the downstream, the TSC network within a destination consist of several elements, namely direct and non-direct supplier, tour operator, travel agent, tourist, local government or business association. Including in this network, non-business entities such as the natural environment or scenery. Direct supplier and non-direct supplier belong to the upstream side of TSC (the first-tier and second-tiers). The direct supplier is the first tier of TSC which directly supply tourism services to the tour operator/travel agent. As an example, theme parks, shopping centers, hotels, bars and restaurants, handicraft shops, and transportation operators. The non-direct supplier is the second-tiers of TSC which supply services or products to the first-tier of TSC. Non-direct supplier consists of food/drink manufacture, equipment manufacture, furniture manufacture, craft producers, water/energy supply and waste recycling and disposal. Travel agents are the retail branches of tourism products. Travel agent usually deal with tour operators and tourist. Sometimes travel agent and tour operator are the same entities of business but, sometimes travel agent and tour operator is different entities of business. Tour operators have so many impacts on the activities in the TSC. Tour operator may buy individual travel services (such as accommodation and transport) from their suppliers (such as hotels and carriers) and pull together with them into the package of a holiday, which is sold to the public directly or through travel agents [20]. Thus, business association or local government facilitates the collaboration between private and public sector collaboration through policy intervention [19].

2.2 Green Supply Chain and Enabler

The term of green tourism can be seen from two purposes. First, the term of green tourism is used to tell the customer that the destination of their holiday is beautiful and unspoiled. Green tourism or another term associated with the environmental concern is frequently used to brand the nature holidays to exotic destinations [21]. Second, green tourism is used to indicate that tourism operations arranged in that zone do not damage the environment [22]. However, a service or product can be believed to be green when it is advantageous to the consumer and producer without damaging the environment. According to reference [23], the green tourism concept can be broken down into four components, namely environmental responsibility, local economic vitality, cultural diversity, and experiential richness. Environmental responsibility is related to protecting, conserving, and enhancing nature and the physical environment to ensure the long-term health of the life-sustaining ecosystem. Local economy vitality is related to supporting local economies, businesses, and communities to ensure economic vitality and sustainability. Cultural diversity is related with valuing and appreciating cultures and cultural variety so as to make certain the continued well-being of local or host cultures; whereas, experiential richness correlated to giving enriching and satisfying experiences through active, personal and meaningful participation in, and involvement with, nature, people, places, and cultures. Thus related to environmental responsibility, there are three methods included by which a tourism practice would have to demonstrate practices for preventing or minimizing impacts to the environment if it were to be considered a green operations such as the wise use of resources such as raw materials, water and energy; the prevention of pollution (air, land, and water); and the protection and where possible the enhancement of biodiversity [24].

In this study, the concept of tourism supply chain management is the important concept to generate the critical success factor, which in turn will become the key enabler to support the successful of the implementation of green tourism. Thus, the critical success factor will be identified based the similar study from the previous authors, such as Andrianda [25], Organization for Economic Cooperation and Development [26], and Ramezanian and Heydarnia [27]. In detail, the list of the critical success factor or enabler used in this study and its reference can be seen the following table

TABLE I. CRITICAL SUCCESS FACTOR OR ENABLER OF GREEN TOURISM

Elements of TSC	Critical success factors or enabler
Upstream of TSC	Scarcity of resources[26] (E1)
	The development of eco-friendly technologies in the field of tourism[26] (E2)
Tour operator and travel agent	The willingness of the tour operator to avoid the negative reputation[25] (E3)
	The willingness of the tour operator to get the positive reputation[25] (E4)
	The marketing value of eco-friendly tourism[26] (E5)
	The tour operator culture is associated with the environmental values[25],[27] (E6)
	The competitive advantage from eco-friendly tourism[27] (E7)
	The initiatives from the tour operator to support eco-friendly tourism[25],[26],[27](E8)
	The commitment of the top management of tour operator to provide the eco-friendly tourism [25],[27] (E9)
	Tour operator wants to be a pioneer in providing eco-friendly tourism [25],[27] (E10)
	The willingness of tour operator to get an operational cost reduction from green tourism [25],[26],[27] (E11)
	The willingness of tour operator to increase the efficiency in managing tourism [27] (E12)
	The willingness of tour operator to increase the quality of tourism services offered [27](E13)
Downstream of TSC	Market demand for eco-friendly tourism [25],[26],[27] (E14)
Local government and business	Government policies and regulations[25],[26],[27 (E15)
	The good cooperation between government,

Elements of TSC	Critical success factors or enabler
association facilitates public and private sector	business association facilitates public and private sector[26]2(E16)
	The commitment of government [26] (E7)
	Education program of eco-friendly tourism from the government [26] (E18)
	An incentive program for doing eco-friendly tourism from the government [26] (E19)

3. Method Of Research

This study use Interpretive Structural Modelling (ISM) as a method to establish a structure or hierarchical relationship among the enablers. ISM is interpretive as based on group's judgment and the decision whether and how the system's elements are connected. It is structural as built on the relationship's foundation and finishing structure is exploited from a complex set of system's variables [28]. The most significant idea of ISM is to use of practical experience of experts and knowledge to decompose a complicated taxonomy into numerous sub-systems as well as assemble a multi-tiered structural form [29]. For complex problems, such as the one under consideration, a number of the factors may be affecting the certain situation. However, the direct and indirect relationships between the factors describe the situation far more accurately than the individual factors taken in isolation. Therefore, ISM develops insights into collective understandings of these relationships [30]. The various steps involved in the ISM can be explained as follow [30].

1) Identify the elements or critical success factor or enabler, which are relevant to the problem or issues In this study, the process of identification the element or critical success factor or enabler was done by literature review and then, this element or critical success factor or enabler were validated by group problem-solving technique. There was seven expert involved as the respondent in group problem-solving technique. Among seven experts, two are representative of Department of Tourism and Culture of Central Java, two are representative of from Department of Tourism and Culture of Magelang District, and three are representative of the tour operator in Borobudur.
2) *Establish a contextual relationship between enabler with respect to which pairs of enablers will be examined*.
3) *Develop a Structural Self-Interaction Matrix (SSIM) of enablers*, which indicates the pair-wise relationship between enablers of the system. In this case, there were four symbol for developing relationship between an enablers (i and j) in the SSIM: V – enabler j will be achieved by enabler i; A – enablers i will be achieved by enabler j; X -enabler i and j will help to achieve each other; and O –both enablers i and j are unrelated.
4) *Develop reachability matrix by converting the SSIM into a binary matrix, and then verify the matrix for transitivity*. E can convert the SSIM into reachability matrix by replacing the symbols V, A, X and O with value 1 and 0 as per the case. The value of (i, j) and (j, i) in reachability matrix becomes 1 and 0 when the (i, j) entry in the SSIM is V. The value of (i, j) and (j, i) in reachability matrix becomes 0 and 1 when the (i, j) entry in the SSIM is A. The value of (i, j) and (j, i) in reachability matrix becomes 1 when the (i, j) entry in the SSIM is X. Then, the value of (i, j) and (j, i) in reachability matrix becomes 0 when the (i, j) entry in the SSIM is O. For final reachability, matrix transitivity is verified. Transitivity is assessing the logic of the relationship between enablers; in this case, if enabler 1 is related to enabler 2 and enabler 2 is related to enabler 3, then, enabler 1 must be related with enabler 3.
5) *Partitioning the reachability matrix into different levels (reachability, antecedent, and intersection).* In the final reachability matrix, we can find the reachability set and the antecedent set for each enabler. The reachability set for a particular enabler contains the enabler itself and the other enablers, which it may help to attain; whereas, the antecedent set for a particular enabler contains the enabler itself and other enablers which help in attaining it. Then, the intersection set will contain all elements which belong to reachability and the antecedent sets. The enabler which belongs to reachability and intersection sets will occupy the top-level in the ISM hierarchy. The top-level enabler of the hierarchy will not help the achievement of any other enabler above its own. Once the top-level enabler is identified, it is separated from the other enablers. Then by the same process, the next level of enablers will be found. This process to identified levels of each enabler will help to build the digraph and final model
6) *Organize the enablers through driver power-dependence diagram*. In this case, all of the enablers will be grouped into four categories based on its value of driving power and dependence. The value of driving power for each enabler is the total number of the enabler (including itself), which it may help to attain; whereas the value of dependence for each enabler is the total number of the enablers (including itself) which may help in attaining it.
7) *Convert the resultant digraph into an ISM*. The structural model from the final reachability matrix can be generated through the vertices or nodes and lines of edges. The relationship between the enablers i and j is shown by an arrow that points from i to j.
8) *Review the ISM model.* The last step is to review the ISM model in order to check the conceptual inconsistency, and making the modification if it necessary.

4. Result And Discussion

1) Result of identification of the enabler

To analyses the enabler for success the implementation of green tourism, nineteen enablers are considered from literature review. Then, after group problem-solving with seven experts, four enablers are excluded and one enabler is added.

2) *Structural Self-Interaction Matrix (SSIM).*

Based on contextual relationships, the SSIM is developed as shown in Table 2.

3) *Reachability matrix*

Following the rules, the initial reachability matrix for the enablers is shown in Table 3 and the final reachability matrix after checking the transitivity is shown in Table 4. In Table 4, the driving power and dependence of each enabler is also shown.

4) *Level partitions*

Following the rules, the first, second, and final iteration of the partition of the reachability matrix into the different level (reachability set, antecedent set, intersection set) is shown in Table 5 to Table 7.

5) *Classify the elements through power-dependence diagram*

Based on the driver power and dependence of each enabler in Table 4, the driver power-dependence diagram is shown in Figure 1. In this case, the enablers are classified into four categories, namely driver, linkage, autonomous, and dependent.

TABLE II. STRUCTURAL SELF-INTERACTION MATRIX (SSIM)

Enabler	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Scarcity of resources	V	V	V	V	V	O	O	V	V	V	O	V	O	V	V	
Eeco-friendly technologies in the field of tourism	O	A	O	O	A	V	V	V	V	V	V	O	A	O		
Get the positive reputation	O	A	O	A	A	A	A	V	A	V	A	V	A			
The marketing value of eco-friendly	V	A	V	O	O	O	O	V	V	V	V	V				
The tour operator culture	O	A	O	A	A	O	O	V	A	V	A					
The competitive advantage	V	A	O	A	A	A	A	V	A	V						
The initiatives to support eco-friendly tourism	V	A	O	A	A	A	A	X	A							
The commitment of the top management	O	A	O	V	A	O	O	V								
Wants to be a pioneer	V	A	A	A	A	A	A									
Operational cost reduction	O	A	O	O	O	A										
Increase the efficiency	O	O	O	O	O											
Government policies and regulations	V	V	V	V												
The good cooperation	V	A	X													
Government commitment	V	A														
Education program	V															
The willingness of the soiciety to maintain their environment																

TABLE III. NITIAL REACHABILITY MATRIX

Enablers	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	1	1	1	0	1	0	1	1	1	0	0	1	1	1	1	1
2	0	1	0	0	0	1	1	1	1	1	1	0	0	0	0	0
3	0	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0
4	0	1	1	1	1	1	1	1	1	0	0	0	0	1	0	1
5	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0
6	0	0	1	0	1	1	1	0	1	0	0	0	0	0	0	1
7	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1
8	0	0	1	0	1	1	1	1	1	0	0	0	1	0	0	0
9	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1
10	0	0	1	0	0	1	1	0	1	1	0	0	0	0	0	0
11	0	0	1	0	0	1	1	0	1	1	1	0	0	0	0	0
12	0	1	1	0	1	1	1	1	1	0	0	1	1	1	1	1
13	0	0	1	0	1	1	1	0	1	0	0	0	1	1	0	1
14	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	1
15	0	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

TABLE IV. FINAL REACHABILITY MATRIX WITH DRIVING POWER AND DEPENDENCE

Enablers	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	*Dricieng power*
1	1	1	1	1*	1	1*	1	1	1	1*	1*	1	1	1	1	1	16
2	0	1	1*	0	1*	1	1	1	1	1	1	0	1*	0	0	1*	11
3	0	0	1	0	1	0	1	0	1	0	0	0	0	0	0	1*	5
4	0	1	1	1	1	1	1	1	1	1*	1*	0	1*	1	0	1	13
5	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	1*	4
6	0	0	1	0	1	1	1	0	1	0	0	0	0	0	0	1	6
7	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	3
8	0	0	1	0	1	1	1	1	1	0	0	0	1	0	0	0	7
9	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	3
10	0	0	1	0	1*	1	1	0	1	1	0	0	0	0	0	1*	7
11	0	0	1	0	1*	1	1	0	1	1	1	0	0	0	0	1*	8
12	0	1	1	1*	1	1	1	1	1	1*	1*	1	1	1	1	1	15
13	0	0	1	0	1	1	1	0	1	0	0	0	1	1	0	1	8
14	0	0	1*	0	1*	1*	1*	0	1	0	0	0	1	1	0	1	8
15	0	1	1	1	1	1	1	1	1	1	1*	0	1	1	1	1	14
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Dependence	1	5	12	4	13	11	15	6	15	7	6	2	8	6	3	14	

*) after check for transitivity

TABLE V. THE FIRST ITERATION OF PARTITION OF THE REACHABILITY MATRIX INTO DIFFERENT LEVEL

Enablers	Reachability Set	Antecedent Set	Intersection Set	Level
1	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16	1	1	
2	2, 3, 5, 6, 7, 8, 9, 10, 11, 13, 16	1, 2, 4, 12, 15	2	
3	3, 5, 7, 9, 16	1, 2, 3, 4, 6, 8, 10, 11, 12, 13, 14, 15	3	
4	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 16	1, 4, 12, 15	4	
5	5, 7, 9, 16	1, 2, 3, 4, 5, 6, 8, 10, 11, 12, 13, 14, 15	5	
6	3, 5, 6, 7, 9, 16	1, 2, 4, 6, 8, 10, 11, 12, 13, 14, 15	6	
7	7, 9, 16	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15	7, 9	
8	3, 5, 6, 7, 8, 9, 13	1, 2, 4, 8, 12, 15	8	
9	7, 9, 16	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15	7, 9	
10	3, 5, 6, 7, 9, 10, 16	1, 2, 4, 10, 11, 12, 15	10	
11	3, 5, 6, 7, 9, 10, 11, 16	1, 2, 4, 11, 12, 15	11	
12	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16	1, 12	12	
13	3, 5, 6, 7, 9, 13, 14, 16	1, 2, 4, 8, 12, 13, 14, 15	13, 14	
14	3, 5, 6, 7, 9, 13, 14, 16	1, 4, 12, 13, 14, 15	13, 14	
15	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16	1, 12, 15	15	
16	16	1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16	16	1

TABLE VI. THE SECOND ITERATION OF PARTITION OF THE REACHABILITY MATRIX INTO DIFFERENT LEVEL

Enablers	Reachability Set	Antecedent Set	Intersection Set	Level
1	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15	1	1	
2	2, 3, 5, 6, 7, 8, 9, 10, 11, 13	1, 2, 4, 12, 15	2	
3	3, 5, 7, 9	1, 2, 3, 4, 6, 8, 10, 11, 12, 13, 14, 15	3	
4	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14	1, 4, 12, 15	4	
5	5, 7, 9	1, 2, 3, 4, 5, 6, 8, 10, 11, 12, 13, 14, 15	5	
6	3, 5, 6, 7, 9	1, 2, 4, 6, 8, 10, 11, 12, 13, 14, 15	6	
7	7, 9	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15	7, 9	2
8	3, 5, 6, 7, 8, 9, 13	1, 2, 4, 8, 12, 15	8	
9	7, 9	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15	7, 9	2
10	3, 5, 6, 7, 9, 10	1, 2, 4, 10, 11, 12, 15	10	
11	3, 5, 6, 7, 9, 10, 11	1, 2, 4, 11, 12, 15	11	
12	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15	1, 12	12	
13	3, 5, 6, 7, 9, 13, 14	1, 2, 4, 8, 12, 13, 14, 15	13, 14	
14	3, 5, 6, 7, 9, 13, 14	1, 4, 12, 13, 14, 15	13, 14	
15	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15	1, 12, 15	15	

TABLE VII. THE FINAL ITERATION OF PARTITION OF THE REACHABILITY MATRIX INTO DIFFERENT LEVEL

Enablers	Reachability Set	Antecedent Set	Intersection Set	Level
1	1	1	1	12

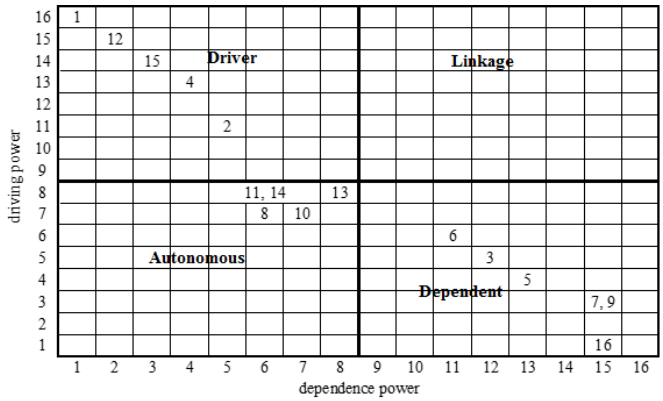

Figure 1. The driver power-dependence diagram

The first category is 'autonomous enabler'. This category has weak driver power and weak dependence. These enablers are relatively disconnected from the system. In the present study, increase the efficiency, the commitment of government, the good cooperation between governments, business association facilitates public and private sector, the commitment of the top management, and operational cost reduction belong to the first category. The second category is the dependent enabler. The second category has weak driver power but strong dependence. The willingness of society to maintain their environment, the initiatives to support eco-friendly tourism, the willingness to be a pioneer, the tour operator culture, the positive reputation, and the competitive advantage belong to the second category. The third category is the linkage enablers that have strong driver power and dependence. In this study, no enabler belongs to the third category. Any action on this enabler will have an impact on the others and also a feedback impact on themselves. The fourth category is independent enabler or drivers. This category has strong driver power and weak dependence. The scarcity of resources, government policies and regulations, education program from the government, the marketing value of eco-friendly tourism, and eco-friendly technologies in the field of tourism belong to the fourth category.

6) *Formation of ISM*. After removing the transitivities as described in the ISM methodology, the digraph is finally converted into ISM as shown in Figure 2. From the ISM-based model for the success of the implementation of green tourism, it is observed that the willingness of society to maintain their environment, the initiative to support eco-friendly tourism and the willingness to be a pioneer in providing eco-friendly tourism are weak drivers but strongly dependent on other enablers. They position are at the top of ISM hierarchy. These enablers represent desired objective for any condition and classified as dependent variable. Thus, in the bottom of ISM-base mode for the success of the implementation of green tourism, we can find several enablers, such as factor scarcity of the resource, government policy and regulation, education program from the government, and the marketing value of eco-friendly tourism. This enabler will have as strong driving power. This enabler will help the organizations to achieve their desired objectives and are classified as independent enabler

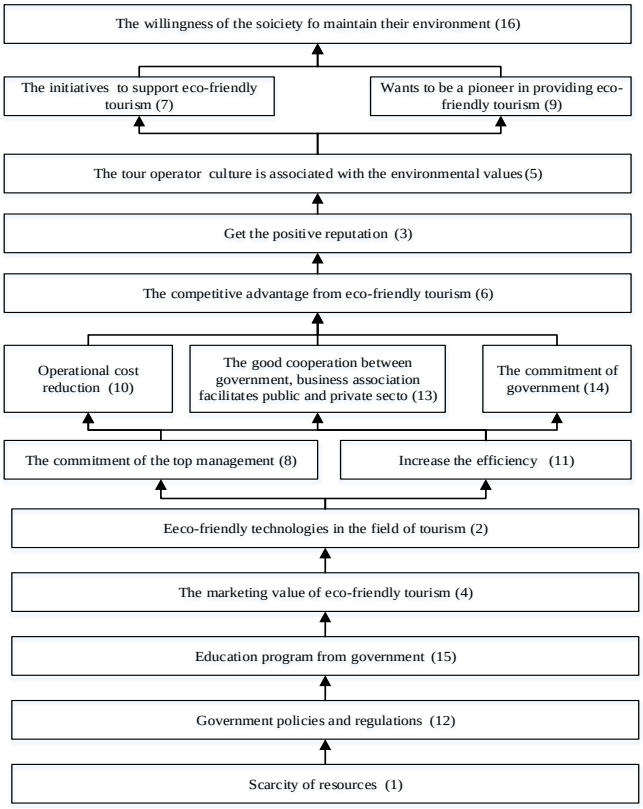

Figure 1. ISM-based model for the success of the implementation of green tourism

5. Conclusion

The success of implementation of green tourism in Borobudur is depending on various critical success factor or key enabler. These enablers may be related with the context of several elements of tourism supply chain management such as the source of the supply chain (first tier and second tier of supplier), tour operator, travel agent, tourist, and government. Based on this context, 19 enablers were identified from the literature review and then after group problem-solving, 4 enablers were excluded and 1 enabler was included into the list. In the end, there were 16 key enablers for the success of implementation of the green tourism in Borobudur. Thus, we need to establish the structure of hierarchy among 16 key enablers. In this case, interpretive structural modeling has helped in establishing the structure of hierarchy or relationships between these 16 key enablers. It has also helped in determining driving and dependence power of all enabler. Scarcity of resources, government policies and

regulations, education program from government, the marketing value of eco-friendly tourism, and eco-friendly technologies in the field of tourism have emerged as drivers; and the willingness of society to maintain their environment, the initiatives to support eco-friendly tourism, the willingness to be a pioneer, the tour operator culture, the positive reputation, and the competitive advantage have emerged as dependent variables. Out of all these enablers, scarcity of resources has emerged as the most important factor for taking successful of implementation of green tourism. This implies that scarcity of resources is essential for taking all initiatives for implementation of green tourism.

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