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THE USE OF ISOLATION INDICATOR FOR EXPLAINING TOURISM ARRIVALS ON TROPICAL ISLANDS

Abstract: The aim of the article is verification of possibility of use of UNEP isolation indicator for measuring isolation of tropical islands for tourism purposes. 30 tropical islands were included in the study. The correlation between intensity of tourism movement and isolation indicator by Spearman rank correlation was $-0,46$. More isolated islands have smaller intensity of tourism movement and less isolated have higher intensity of tourism movement ratio. But there are also exceptions from this rule – territories which are more isolated and with higher intensity of tourism movement such as Maldives and less isolated with the smaller intensity of tourism movement such as Sao Tome and Principe. UNEP isolation indicator is not ideal measure for tourism purposes.

Key words: isolation indicator, tropical islands, intensity of tourism

INTRODUCTION

The aim of the article is verification of possibility of use of isolation indicator created by United Nations Environment Programme (UNEP) for measuring the extend of isolation of tropical islands for tourism purposes.

The UNEP isolation indicator was created for measuring the isolation of island from potential sources of colonization by particular species of plants and animals. The hypothesis is that isolation of tropical islands influences on intensity of tourism movement. More isolated

islands should have smaller intensity of tourism movement and islands which are less isolated should have higher intensity of tourism movement. It can be assumed that the location of tropical island territories influences on duration and price of transportation between the place, from which tourists come from and tropical island territories. The large distance and therefore high isolation indicator should have negative influence on intensity of tourism movement.

DATA AND METHODS

30 tropical island territories included in the study¹. Analysed tropical territories have surfaces less than 30 000 sq km and number of population less than 4 millions. The method used in the article was Spearman rank correlation.

THE INTENSITY OF TOURISM MOVEMENT

In the article it was used the ratio of intensity of tourism movement, which is a quotient of number of foreign visitors (both tourists and one-day visitors) and the number of citizens².

The tropical island territories with the highest intensity of tourism movement ratio are:³ Cayman Islands (4 531), British Virgin Islands (3 664) and American Virgin Islands (2 409). However the tropical island territories with the lowest intensity of tourism movement ratio are: Salomon Islands (1), Comoros (3) and Sao Tome and Principe (4). The average of intensity of tourism movement ratio for analysed tropical island territories was 707 and median was 153.

ISOLATION INDICATOR

The term of isolation is not precise. More precise term is for spatial isolation. It suggests reference of isolation for space and indicates its

¹ 21 independent countries and 9 dependent territories.

² For better visibility the ratio was multiplied by 100.

³ The data for the year 2004.

geographical aspect. Spatial isolation is an isolation of territory A from B (Jeđrusik 2001, s. 23).

UNEP isolation indicator was created for measuring isolation of islands from potential source of colonization from live species. It is „the square roots of the distances to the nearest equivalent or larger island, the nearest island group or archipelago and the nearest continent are added to give an index of isolation. Where one of these does not exist, the next higher distance is repeated, except in the case of small satellite islands close to much larger land masses” (UNEP – <http://islands.unep.ch/CMM.htm> – 23.07.2007).

Figure number 1 presents the value of UNEP isolation indicator. Table number 1 shows the data about number of citizens, foreign tourism

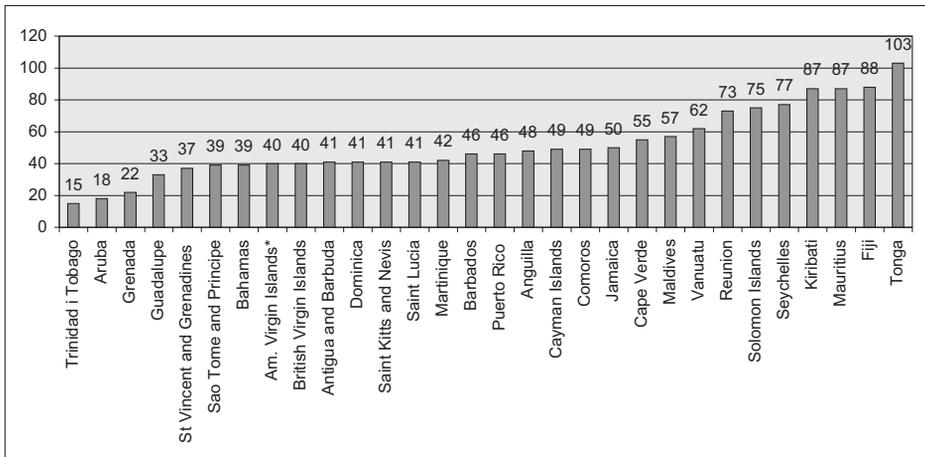


Fig. 1. UNEP isolation indicator for analysed tropical island territories

*Because of lack of data the same value was used as for British Virgin Islands.

Source: United Nations Environment Programme (<http://islands.unep.ch/CMM.htm>) – 23.07.2007.

The territories with the largest value of UNEP isolation indicator are: Tonga (103), Fiji (88), Mauritius (87), Kiribati (87). Moreover the lowest isolation indicator were in: Aruba (18) and Trinidad and Tobago (15). The average value of isolation indicator was 51 and median was 46.

Table 1.

The number of citizens, number of foreign visitors arrivals, intensity of tourism movement ratio for 2004, UNEP isolation indicator for analysed tropical islands territories

Analysed tropical island territories	The number of population	Foreign visitors arrivals (thou)	Intensity of tourism movement ratio	UNEP isolation indicator	Island for which isolation indicator is used
Am. Virgin Island	108 775	2 620	2 409	40 [#]	St Thomas
Anguilla	13 008	121	930	48	Anguilla
Antigua and Barbuda	63 320	768	1 213	41	Antigua
Aruba	71 218	1 304	1 831	18	Aruba
Bahamas	229 697	5 004	2 179	39	New Providence
Barbados	278 289	1 273	457	46	Barbados
British Virgin Island	22 187	813	3 664	40	Tortola
Cape Verde	415 294	157	38	55	São Tiago
Cayman Islands	43 103	1 953	4 531	49	Grand Cayman
Comoros	651 901	18	3	49	Grande Comore
Dominica	69 278	462	667	41	Dominica
Fiji	880 874	*499	57	88	Viti Levu
Grenada	89 357	370	414	22	Carriacou
Guadalupe	444 515	586	132	33	Basse Terre
Jamaica	2 713 130	2 515	93	50	Jamaica
Kiribati	100 798	63	62	87	Tarawa
Maldives	339 330	*617	182	57	Male'
Martinique	429 510	630	147	42	Martinique
Mauritius	1 220 481	739	61	87	Mauritius
Puerto Rico	3 897 690	4 890	125	46	Puerto Rico
Reunion	766 153	430	56	73	Reunion
Saint Kitts and Nevis	38 836	377	971	41	St Kitts
Saint Lucia	164 213	791	482	41	St Lucia
São Tome and Principe	181 565	8	4	39	Sao Tome
Seychelles	80 832	128	158	77	Mahe
Solomon Islands	523 617	21	1	75	Guadalcanal
St Vincent and Grenadines	117 193	262	224	37	St Vincent
Tonga	110 237	*41	37	103	Tongatapu
Trinidad and Tobago	1 096 585	497	45	15	Trinidad
Vanuatu	202 609	99	49	62	Efate

[#] because of lack of data the same value was used as for British Virgin Islands

* - the number of tourist arrivals.

Source: The number of population: United Nations Statistical Division – Demographic and Social Statistics – <http://unstats.un.org/unsd/demographic/products/socind/popula->

tion.htm, Social Indicators on Population. The number of visitors' arrivals: WTO, 2006, *Compendium of tourism statistics*, Madrid. Isolation indicator – UNEP (<http://islands.unep.ch/CMM.htm>) – 23.07.2007.

RESULTS

The correlation between isolation indicator and intensity of tourism movement ratio by Spearman correlation method was calculated. It turned out that with the trial of 30 island territories ($n = 30$) correlation is $-0,46$ and it is significant at the 0.05 level. That means average negative correlation between examined indicators. Less isolated islands have higher intensity of tourism movement and more isolated have smaller intensity of tourism movement ratio.

It can be assumed only average negative correlation between UNEP isolation indicator and tourism intensity movement ratio. Some of examined tropical island territories are exceptions from this rule: the higher isolation indicator the lower intensity of tourism movement and the lower isolation indicator the higher intensity of tourism movement. Table number 2 shows the subtract of ranks between the intensity of tourism movement and isolation indicator.

Table 2.
Ranks in Spearman correlation method for analysed tropical island territories

Analysed tropical islands territories	Ranks for intensity of tourism movement ratio	Ranks for isolation indicator	Subtract of ranks
American Virgin Islands	28	8	20
Anguilla	23	17	6
Antigua and Barbuda	25	10	15
Aruba	26	2	24
Bahamas	27	7	20
Barbados	20	15	5
British Virgin Islands	29	9	20
Cape Verde	5	21	-16
Cayman Islands	30	18	12
Comoros	2	19	-17
Dominica	22	11	11
Fiji	9	29	-20
Grenada	19	3	16
Guadalupe	14	4	10
Jamaica	12	20	-8

Kiribati	11	27	-16
Maldives	17	22	-5
Martinique	15	14	1
Mauritius	10	28	-18
Puerto Rico	13	16	-3
Reunion	8	24	-16
Saint Kitts and Nevis	24	12	12
São Tome and Principe	3	6	-3
Saint Lucia	21	13	8
Seychelles	16	26	-10
St Vincent and Grenadines	18	5	13
Solomon Islands	1	25	-24
Tonga	4	30	-26
Trinidad and Tobago	6	1	5
Vanuatu	7	23	-16

Source: own elaboration

CONCLUSIONS

UNEP isolation indicator is not ideal to measure an isolation for tourism purposes. The strength of this correlation measured by Spearman rank ratio was $-0,46$. The intensity of tourism movement can be influenced by the transport accessibility of island, the price of air or sea transportation or frequency and duration of connections. More over there are other variables such as tourism attractiveness, which includes both environmental attractiveness and anthropological attractiveness, and the development of tourism infrastructure. For example island, which have higher isolation indicator e.g. Maldives (UNEP isolation indicator -57) nowadays are very accessible and have high intensity of tourism movement ratio. There are also such islands, which although small UNEP isolation indicator have small number of air connection e.g. Sao Tome and Principe (UNEP isolation indicator -39) or are not included as a port of call for cruises e.g. Trinidad and Tobago (UNEP isolation indicator -15). UNEP isolation indicator is not proper measure for tourism purposes. With advanced transport infrastructure the distance is not priority. Perhaps good measure for isolation for tourism purposes should be the frequency of air transport connection and its cost for particular islands and the accessibility of island territories by sea.

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