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RESEARCH ON IMPACT OF RESOURCE DEPENDENCE AND INSTITUTIONAL PRESSURE ON RESIDENTS' ENVIRONMENTAL BEHAVIOR - A CASE STUDY OF TAIWAN'S POST-DISASTER RECONSTRUCTION OF HOT SPRING AREAS

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Abstract

"Man can conquer nature" and "nature fights back" are people's dialogues regarding their interaction with nature. The environmental impact versus people's desire in exploitation is the unavoidable topic to be discussed when facing the emergency response after the strike of natural disasters. Tourism is an industry that depends on natural environmental resources, which is especially the case for the hot spring industry. However, as many hot spring tourist attractions are located in or close to environmentally sensitive areas, environmental disasters frequently occur, which gives rise to the implementation of related environmental systems. This study focused on the Baolai Bulao Hot Spring Area in Kaohsiung, which was hit hard by Typhoon Morakot in 2009. The local residents were taken as the respondents for the questionnaire of this study, and confirmatory factor analysis was conducted to examine the relationship between research constructs. The results show that resource dependence and institutional pressure have positive and significant impact on residents' positive environmental attitude and responsible environmental behavior, thus, resource restriction, conversion ability, and mimetic pressure are the key influencing factors. Finally, based on the research results, policy implications and research suggestions are put forward for the implementation of a post-disaster recovery system and the promotion of residents' environmental awareness in hot spring tourist areas.

Key Words: Emergency Response, Environmental Impact, Recovery, Typhoon, Climate Change

Introduction

The global tourism industry is enjoying rapid growth, has become one of the major pillar economies in the world, and is regarded as a chimney-free industry. However, the tourism industry is an industry that relies heavily on natural environmental conditions (Bode et al., 2003). Many scenic spots in tourist areas are located in or near environmental risk areas. With the changes in global environment and climate, the intensity and probability of extreme weather events have increased dramatically, exposing more tourism areas to the threat of climate-related disasters and increasing the risk of disasters in many areas. The symbiosis and coexistence of natural resources in sightseeing areas with tourism industry development, tight control and management to maintain a balance between economic growth and environment (Riley, 2014) and allow the sustainable development of tourist destinations are issues worthy of discussion.

One type of sightseeing resource requires special attention for conservation, and that is hot spring resources. Hot spring resources are precious natural resources on which local residents depend for their livelihood, and they also bring multiple hot spring sightseeing experiences to tourists (Chang, 2012). Hot spring resources are often located in remote mountainous areas, and tourists' environmental behavior will be in direct and frequent contact with natural environment resources, which has great impact on the environment. Taiwan has rich hot spring resources, most of which are located near remote mountain tribes. However, the hot spring industry is a special tourism industry in Taiwan; part of its hot spring resources are under the management of the Water Resources Agency, which gives priority to conservation; part of its hot spring for sightseeing is under the management of the Tourism Bureau, which is oriented towards industrial development.

Therefore, this study takes the Baolai Bulao Hot Spring Area in Kaohsiung, Taiwan, as an example, which experienced Typhoon Morakot in August 2009, and desperately needed to rebuild its sightseeing conditions and establish a new environmental system. The invasion of Typhoon Morakot caused landslides, earth-rock flows, river bank collapses, flooding, and other disasters in local mountainous areas, and the local agriculture and tourism industries also suffered great losses (Kaohsiung City Government, 2016). The purpose of this study is to take local residents as the research subjects to explore their dependence on natural environmental resources, their feeling regarding the pressure of relevant systems and norms, and the influence of their positive environmental attitude and responsible environmental behavior, and further define the key influencing factors according to relevant statistical methods.

Literature Review

1. Resource Dependence

The belief that “Man can conquer nature” has gradually turned into “na-

ture fights back", "human beings are part of nature, and human beings must live in harmony with nature", and thinking about the harmony between fragile environments and the human desire for development. Dunlap and Van Liere (1978) believed that the problem of environmental and ecological damage is due to the problems of human attitudes, beliefs, and values. Human beings rely on environmental resources, but they face the dilemma of resource depletion and environmental fragility. This study reflected through the important school of organization theory, meaning the theory of resource dependence, which focuses on the ability of organizations to establish relationships with other organizations in order to obtain resources (Hessels and Terjesen, 2010).

2. Institutional Pressure

The international community is already very concerned about environmental issues. The practices laid down in many international conventions include the concepts of "conservation", "sustainable development", and emphasizing "change", that is, to change the wrong collective behavior and individual behavior of human beings that harm the environment. Facing the adjustment of environmental values, environmental policies, and systems, this study explores the changes of individual behavior and decision-making under the pressure of institutional environment in the institutional theory. Different from the view of pursuing efficiency in the past, the institutional environment holds that changes in organizational behavior are rarely driven by competitive pressure or to improve efficiency, as most are caused by organizations seeking legitimacy. "Legitimacy" can be defined as "a state recognized by social actors", that is, organizations will follow the common system of the overall environment, which refers to laws and regulations, norms and values (Suchman, 1995).

The process of homogenization has three kinds of pressures, coercive pressure, normative pressure, and mimetic pressure. This view is similar to that proposed by the theory of resource dependence, meaning that "organizations will meet the needs of the party on which they depend on for survival resources" (Pfeffer and Salancik 2003).

3. Environmental Behavior, Environmental Attitude, Resource Dependence, and Institutional Pressure

The "New Environmental Paradigm" (NEP) defines the new trend of the interactive relationship between human beings and nature. Facing the emergence and solution of environmental problems, the environmental attitude and behavior of humans must be gradually expanded from the conservation of ecological environments to include the concerns of the entire society and political system. Hungerford and Peyton (1986) defined environment as: "the behavior of an individual or group that wants to solve an environmental problem". Most studies agree that there is a certain degree of correlation between environmental attitude and environmental behavior (Bright and Manfredo, 1995).

This study is based on the theory of resource dependence and institutional pressure to reflect on the influential factors of positive environmental attitude and responsible environment behavior of the residents in hot spring tourist areas rebuilt after the disaster.

There are many common arguments and different discussions regarding resource dependence and the institutional pressure theory, thus, studies are often combined and discussed. Hessels and Terjesen (2010) believed that there is a complementary relationship between resource dependence and the theory of institutional pressure, and it improves the explanatory power of research models. All regions have many policies and systems regarding environmental resources; however, with the different socio-economic environments in tourism areas and various types of residential compositions, the tourism impact they face and their feeling of the implementation of the policy are also different.

Theoretical Framework And Hypotheses

The research model is built on the basis of the above-mentioned literature discussion. The study uses LISREL 9.1 to analyze the confirmatory factors and examine the relationship between the research structural concepts.

$H_{1\sim3}$: Resource dependence has positive and significant impact on institutional pressure, environmental attitude, and responsible environmental behavior.

$H_{4\sim5}$: Institutional pressure has positive and significant impact on environmental attitude and responsible environmental behavior.

H_6: Environmental attitude has positive and significant impact on responsible environmental behavior.

$H_{7\sim8}$: Environmental attitude plays a positive and significant intermediary role among resource dependency, institutional pressure, and responsible environmental behavior.

The research and measurement tools include four scales, which are described, as follows:

1. Resource Dependence (η1)

This aspect measures the degree of local residents' awareness of resource dependence. This study uses “Importance of resources (ξ1)” and “Resource restriction, and conversion ability (ξ2)”, which are the major aspects of the dependence theory, as proposed by Pfeffer and Salancik (2003).

2. Institutional Pressure (η2)

This aspect measures the degree of local residents' perception of institutional pressure. This study adopts three major aspects, “Coercive pressure and normative pressure (ξ3)” and “Mimetic pressure (ξ4)” , as put forward by DiMaggio and Powell (2004).

3.Environmental Attitude (η3)

This aspect measures the values of local residents towards the overall environment, their attitudes towards the responsibility and role of people in the environment, and their emotional tendency of approval and love for environmental affairs. The most widely used tool for measuring environmental attitude is the New Environmental Paradigm scale (NEP Scale), as developed by Dunlap and Van Liere (1978). This aspect was adjusted to “Ecological-oriented attitude (ξ5)” and “People-oriented attitude (ξ6)”.

4. Responsible Environment Behavior (η4)

This aspect measures the behavior intention of the local residents to show prevention or solution strategies to solve an environmental problem. This study used the definition of Smith-Sebasto and D'Costa (1995), meaning responsible environmental behavior. This aspect was adjusted to "Personal practice and consumption behavior (ξ7)" and "Participation in legislation and persuasion actions (ξ8)".

Results

1. Research Area and Subject

In August, 2009, Taiwan region faced the worst natural disaster in recent years. The heavy rain, coupled with long-term rainfall factors, caused many mountain streams to surge and debris to fall, triggering debris flows. After the disaster, the tourist industry of research area was in a slump, with the number of tourists dropping from 520,000 in 2008 to 49,000 in 2010. Such a sharp drop resulted in most of the tourist hot spring industries in the region, which rely on hot springs for their livelihood, to face the dilemma of closure. According to the statistics at the end of October 2017, there were 991 households and 2,190 residents. This local area is a region with low birth rate, low mortality rate, and serious migration of the young and middle-aged population.

From January 1, 2018 to March 31, 2018, the questionnaires of this study were distributed in the main settlements in the Baolai Bulao Hot Springs Area, and the study subjects were local residents. Assumed a sampling error of less than 5% and reliability of 95%, meaning the number of questionnaires must be at least 327.

After the questionnaires were recovered, there are 334 valid questionnaires after eliminating those with regular answers and missing answers. In the valid samples, the distribution of gender(51.7%) was approximately equal. In terms of age distribution, middle-aged and senior residents (61.4 %) made up the majority. In terms of occupation distribution, occupations obviously related to natural environmental resources, such as farming, forestry, fishing, animal husbandry, lodging, catering, and hot spring spa related industries accounted for 42% in total, showing that natural environment resources are closely related to the employment of residents in the area. The residence time of 15 to 30 years was the highest among all respondents (44.7 %), while those who had not lived in this area at the time of the occurrence of Typhoon Morakot, meaning who have been living there for less than 7 years, accounted for only 9.2 %.

2. Scale Reliability and Validity Analysis

In this study, confirmatory factor analysis was used to examine the convergence validity and discriminant validity of the test model. When the factoring load was above 0.45 (Bentler and Wu, 1993), the SMC value conformed to above 0.20 (Hwang, 2004), and each estimated t value was greater than 1.96, it meant that the test item reached a significant level. According to Table 1, the observed variables all reached significant levels, and the estimated parameter factoring loads were all higher than 0.45, thus, the test

Table 1. Descriptive Statistics and Confirmatory Factor Analysis of Various Variables.

Dimension	Measuring variable	NO.	M	SFL	SMC	CR	AVE
Resource dependence	Importance of resources	ξ1	4.11			.87	.54
	. Natural environmental resources play an important role in the development of local industry	X_1	4.12	.84*	.33		
	. Natural environmental resources directly or indirectly affect personal daily life	X_2	3.88	.93*	.56		
	. Natural environmental resources directly or indirectly affect personal economic situation	X_3	4.33	.79*	.58		
	Resource restriction and conversion ability	ξ2	3.14			.88	.58
	. It is convenient for the industry to put natural environmental resources into use.	X_4	3.17	.73*	.57		
	. The sustainable use of natural environmental resources can be mastered	X_5	3.27	.75*	.51		
	. The cost of using and maintaining natural environmental resources can be mastered	X_6	2.98	.79*	.29		
Institutional pressure	Coercive and normative pressures	ξ3	4.15			.84	.51
	. I can feel the pressure of government system promotion (hot spring area related planning system)	X_7	4.08	.78*	.66		
	. I can feel the pressure of relevant laws and regulations on natural environment conservation	X_8	4.29	.81*	.59		
	. I can feel the pressure of government supervision	X_9	4.08	.74*	.31		
	Mimetic pressure	ξ4	4.07			.88	.64
	. I can feel the pressure of developing competition in neighboring tourist areas	X_{10}	3.78	.85*	.39		
	. I can feel the pressure of uncertainty in the future of industrial development	X_{11}	4.65	.64*	.52		
	. I can feel the pressure of industrial development and innovation	X_{12}	4.07	.78*	.51		
Environmental attitude	Ecological-oriented attitude	ξ5	4.23			.79	.52
	. I recognize that industrial development needs to coexist with natural environmental resources	X_{13}	4.07	.72*	.66		
	. I recognize the need for residents to learn to use natural environmental resources in a friendly and sustainable manner	X_{14}	4.28	.81*	.51		
	. I agree that it is necessary to respect the natural environment and resources for tourism development.	X_{15}	4.34	.87*	.52		
	People-oriented attitude	ξ6	3.01			.69	.59
	. I recognize that human beings have the right to change natural environmental resources to meet their needs	X_{16}	2.94	.69*	.33		
	The main purpose of identifying the existence of natural environmental resources is to allow hu-	X_{17}	2.98	.77*	.39		

	man beings to use them.						
	. I agree that the issue of the depletion of natural environmental resources is not very serious	X_{18}	3.11	.69*	.47		
Responsible environmental behavior	Personal practice and consumption behavior	ξ7	3.91			.81	.52
	. I will take the initiative to examine and care for the natural environment outside my home.	X_{19}	4.02	.69*	.55		
	. I will personally participate in environmental protection work	X_{20}	3.92	.59*	.56		
	. I will buy from manufacturers that value environmental protection or commodities with environmental protection labels	X_{21}	3.79	.81*	.49		
	Participation in legislation and persuasion action	ξ8	3.69			.82	.58
	. I will cooperate with government system promotion (hot spring zoning) and relevant public meetings and opinion investigation	X_{22}	3.44	.68*	.49		
	. I will take the initiative to report environmental damage	X_{23}	3.28	.73*	.66		
	. I will persuade relatives and friends to participate in and care more about natural environment resources	X_{24}	4.35	.59*	.61		

Note 1: M is the average mean; SFL is the standardized factoring load; SMC is a multivariate correlation square value; CR is the composite reliability; AVE is the average variance extracted

Note 2: * indicates a statistically significant level is reached when α = 0.05 consistency of the research model is acceptable.

model of this study has convergence validity. The Composite Reliability (CR) values of each aspect were between 0.69 and 0.88, while the Average Variance Extracted (AVE) values were between 0.51 and 0.64, which are both higher than or in line with the recommended value of 0.60 and 0.50 by Bagozzi and Yi (1988). The internal In terms of discriminant validity, Anderson and Gerbing (1988) put forward the "potential variable pairing construction correlation method", where the potential variables of the pattern are paired into a correlation, and the difference between the chi-square value subtraction between the fixed and free estimates is verified. The estimated values of the correlation coefficients of the potential variables in this study are shown in Table 2, which shows that the difference between all the chi-square values reached a significant level.

3. Structural model results

In parameter estimation, Maximum Likelihood (ML) was used to estimate the fit function of the structural equation model. The revised results show that the overall model fitness indicators are $\chi^{2/df}$=2.82; *GFI*=0.92; *AGFI*=0.95; *RMSEA*=0.04; *NFI*=0.93; *NNFI*=0.93; *CFI*=0.91; *SRMR*=0.05. The values shown that there is considerable fit between the sample data and the hypothesis model, with all data reaching the standard range, thus, the theoretical

architecture established by this study is a good model.

The relationships between the variables and the aspects in the measurement model are shown in Figure 1, which shows that the factoring loading of all variables reached a significant level ($p<.05$). The structural coefficients of each construct in the structural model are shown in Table 3. The structural coefficients of resource dependence for institutional pressure, environmental attitude, and responsible environmental behavior are 0.34*, 0.69*, and 0.45*, respectively, which also reach a significant level (p<.05).

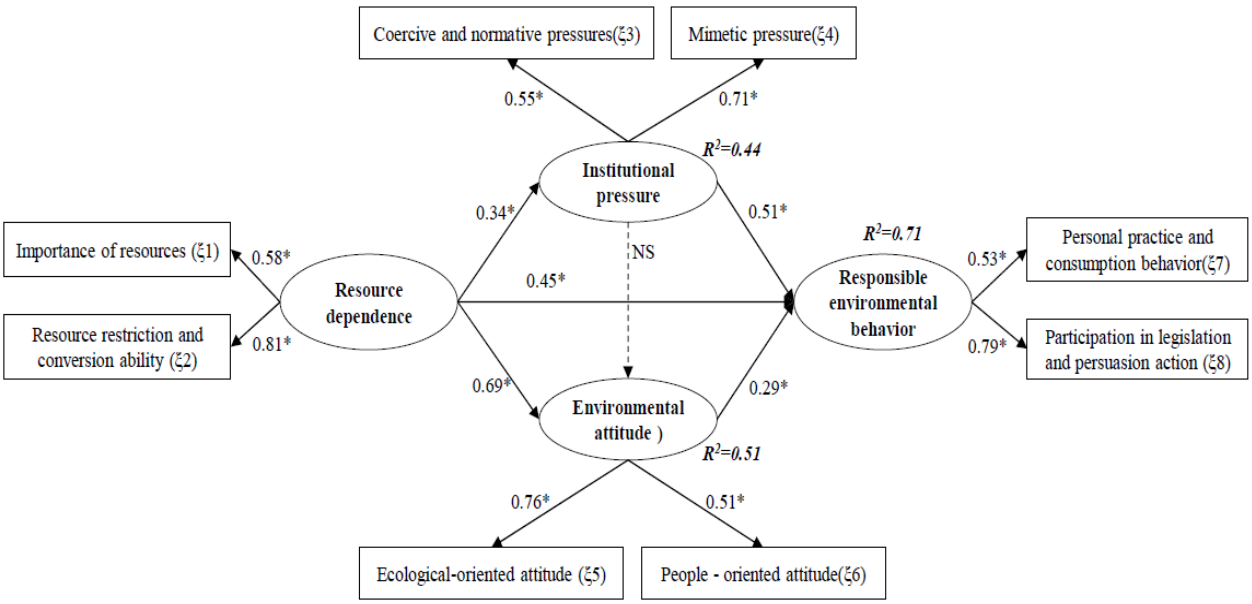

Figure 1. Structural model results.
* p<.05; NS indicates the significant level is not reached.

Thus, $H_{1\sim3}$ receives support. The structural coefficient of institutional pressure for responsible environment behavior is 0.51*, indicating that institutional pressure has positive effect on responsible environment behavior (p <.05), and H_5 is supported. Only institutional pressure has positive effect on environmental attitude, but does not reached a significant level, thus, H_4 does not receive support, and environmental attitude does not play an intermediary role between institutional pressure and responsible environmental behavior, thus, H_8 does not receive support. The structural coefficient of environmental attitude for responsible environment behavior is 0.29*, which indicates that positive environmental attitude has positive influence on responsible environmental behavior (p <.05), thus, H_6 receives support. Regarding the testing of environmental attitude's intermediary role between resource dependence and responsible environmental behavior, the coefficient is 0.18*, which is significant and less than 0.45*, thus, it has a partial intermediary role, and H_7 is supported. The overall model explanatory power and the relationship with the constructs are shown in Figure 1. The explanatory powers of environmental behaviors, institutional pressure,

and environmental attitude are 71%, 44% and 51%. It shows that the overall model has a certain degree of explanatory power.

Table 2. Analysis of Discriminant Validity

Potential variable	(ξ1)	(ξ2)	(ξ3)	(ξ4)	(ξ5)	(ξ6)	(ξ7)	(ξ8)
Importance of resources (ξ1)	-							
Resource restriction and conversion ability (ξ2)	0.66[a] (168.4[*])	-						
Coercive and normative pressures (ξ3)			-					
Mimetic pressure (ξ4)			0.48 (87.5[*])	-				
Ecological-oriented attitude (ξ5)					-			
People - oriented attitude (ξ6)					0.42 (133.1[*])	-		
Personal practice and consumption behavior (ξ7)							-	
Participation in legislation and persuasion action (ξ8)							0.52 (128.2[*])	-

Note: a is the correlation coefficient; ( ) is the chi-square value difference; [*] p<.05

Table 3. Hypothesis Contrast

Path	Structural coefficient	Verification result
H_1: Resource dependence → Institutional pressure	0.34[*]	Established
H_2: Resource dependence → Environmental attitude	0.69[*]	Established
H_3: Resource dependence → Responsible environmental behavior	0.45[*]	Established
H_4: Institutional pressure→ Environmental attitude	0.33	NS
H_5: Institutional pressure→ Responsible environmental behavior	0.51[*]	Established
H_6: Environmental attitude →Responsible environmental behavior	0.29[*]	Established

[*] p<.05; NS indicates the significant level is not reached.

4. Discussion of Research Hypotheses Results

1.Impact of resource dependence

It can be found that model has positive and significant impact, which is in line the main influencing factors of the resource dependence theory, as proposed by Pfeffer and Salancik (2003). This shows the improvement of the sustainability and convenience of the use of natural environmental resources in industrial input, as well as the mastery of usage and maintenance costs, will help to establish a model of positive environmental attitude and responsible environmental behavior. This empirical conclusion also conforms to the concept of perceptual behavior control, as proposed by Ajzen (1991), meaning that the degree of difficulty in carrying out behavior, as well as the skill, ability, and resources possessed by individuals, will affect behavior intention. Although local residents are aware of the importance of natural environmental resources, the irreplaceable and uncontrollable nature of environmental resources is also a key factor affecting resource dependence.

2. Impact of institutional pressure

This model is in line with the main pressure source of the process of the homogenization of institutional pressure, as put forward by DiMaggio and Powell (2004). In the process of post-disaster reconstruction, the government continues to promote relevant environmental resources management systems and norms, and local residents clearly feel formal or informal institutional pressure from the government. In addition, there is public pressure for environmental conservation, thus, it is necessary to re-examine local environmental sensitivity and the problem of resource conservation.

3. Impact of environmental attitude

Among all aspects of the environmental attitude aspects, the factoring load of ecological-oriented attitude is the highest, which indicates that it has significant impact on responsible environmental behavior. The research results show that it can improve the local residents' recognition of the coexistence of industry with natural environmental resources, recognition of the friendly use of natural environmental resources, and recognition of the need to respect natural environmental resources in tourism development, which will help foster responsible environmental behavior. The empirical results show that environmental attitude has positive and significant impact on environmental behavior. This is in line with the empirical results of previous literature (Hou and Kuo 1998), as well as with the expectations of the research hypotheses.

Conclusion

This study puts forward the following three suggestions regarding policy:

1. Institutional pressure aspect

The empirical results show that institutional pressure is the most important factor affecting responsible environmental behavior, and mimetic pressure is the most significant influencing factor. Therefore, it can be known that the interviewees feel insecure about the future development of the local hot spring tourism industry. In the face of diversified consumption patterns, local residents also feel obvious pressure regarding how there can be innovative

services in the local hot spring tourism industry, and even in the extended hospitality industry, in order to result in higher competitiveness. The implementation of the policy system will take more time to communicate with local residents and industries. In combination with the implementation of counseling, buffering, and supporting mechanisms, the role of the government should be adjusted from supervisory to a helper, in order to reduce the uncertainty and insecurity felt by local residents and industries.

2. Resource dependency aspect

After Typhoon Morakot, the area faced the arduous process of environmental reconstruction; however, most businesses choose to go out of business and leave their hometown when the prosperity of the hot springs and sightseeing industries, which they depended on for their livelihood, was over. The local residents are very aware of the importance of their dependence on environmental resources, and are also very deeply aware of the impact of natural environmental resources on their life and economy. The stability of hot spring water sources has always been a problem that the region must actively solve after a disaster. After 8 years, the amount of water was finally found, and the water temperature was able to meet the requirements of the hot spring water sources used by local businesses. The hot spring public pipeline and supply plan to provide stable hot spring water sources in the locality to enable the local people to feel the stability of the water source is worth promoting by relevant units.

3. Aspects of responsible environmental behavior

In terms of responsible environmental behavior, the willingness to take part in legislation and persuasion has been lowly expressed, which is in line with the general understanding of the people's customs for residents in the southern part of Taiwan. People here are relatively conservative, not concerned with the government's policy affairs, and are often less involved in environmental affairs. It is necessary to promote environmental education, but most of the residents in this area are senior citizens and few people have a college degree or above. The scenic area administration office and the district office must integrate academic units to go to the countryside to carry out environmental education courses with the help of practical cases for illustration, in order that local residents will be encouraged to voluntarily examine and care for the natural environment around their homes.

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