The Identification of Indicators to Monitor Recreational Experiences for Benefit-Based Management : A Delphi Study[1]*

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Benefit-Based Management 모델을 위한 山林 休養 經驗 因子의 糾明[1]*

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ABSTRACT

The objective of this study was to identify and evaluate indicators which offer the significant influence on recreationists' experiences. Delphi survey technique with a panel of professionals was employed to collect data for this study. The Delphi process was designed with three round questionnaires. The identified indicators in this study should be basic information for Benefit-Based Management (BBM) Model for forest recreation areas.

A list of 38 indicators relating to physical/biological, managerial and social components of recreation experiences submitted from three round questionnaires. From the results, indicators included in physical/biological category suggested as more important ones than other categories of indicators.

Key Words : Delphi, recreational experiences, indicators, Benefit-Based Management

要 約

본 硏究는 최근 山林 休養 管理 분야에서 浮上되고 있는 Benefit-Based 관리 모델을 위한 休養客 經驗 指標 因子를 究明하기 위하여 실시되었다. 이를 위해 專門家 意見 수렴 조사인 델파이 技法을 이용하여 3차에 걸친 설문 조사에 의해 자료가 收集되었다. 收集된 자료의 분석 결과 최종 38개의 生物/物理的 因子, 管理的 因子 그리고 社會的 因子가 도출되었다.

38개의 인자에 대한 加重値 合에 의한 重要度 분석 결과 '아름다운 숲'과 '깨끗한 물과 계곡' 등 생물/물리적 인자들이 上位 集團에 속해 있었다. 이는 이용객의 휴양 경험에 있어 생물/물리적 인자가 매우 중요한 考慮 對象임을 알 수 있었다.

INTRODUCTION

A frequently cited goal of forest recreation man-agement - to provide opportunities for a wide range of satisfying recreation experiences appropriate for a given area - has been emphasized by many researchers recently (Manfredo, Driver and Brown, 1983; Lee and Driver, 1992; Stein and Lee, 1995). With this trend, a new and evolving recreation management framework called the "Benefits-Based Management (BBM)" has developed to guide recreation resource policy analysis and management. The key to implementing BBM is an understanding of how recreation managers can facilitate the reali-zation of recreation benefits (Bruns et al., 1994).

Within BBM, a benefit is a "desirable change of state," an improved condition or state of an individual, a group of individuals, a society, or

even nonhuman organism (Driver et al., 1987). Thus, the benefit is an improved condition that results from some change that takes place because of the management and use of the recreation resource. In addition, benefit used in BBM is that recreation services might not cause any change in individuals or groups of individuals or the physical environment as the result of the provision and use of a recreation opportunity, but if the opportunity was not provided or used, a decrement in one's desired state - or a worse condition - might result (Driver, 1994). In summary, a benefit is defined either as a change in individuals or groups of individuals that is viewed as desirable, or as the prevention of a worse condition through maintenance of a desired condition.

BBM builds upon and is an extension of the activity and experience-based approaches to recreation resource management. Activity-based management viewed a recreation opportunity as an option for people to participate in a specified activity such as camping, fishing, hiking and so on. This approach was primarily supply oriented and focused on facilities (Lee and Driver, 1992). There was little attention given by managers to what recreationists got from use of the opportunity. Management objectives were defined in terms of numbers of activity opportunities to be provided with little concern for what constitute a quality recreation opportunity (Driver, 1994).

Experience-based management expanded recreation participation beyond simply participation in activities by focusing on the psychological outcomes or experiences realized from recreational engagement. Within this context, the word "experience" is used synonymously with the word "psychological outcome" to denote a specific type of response, such as feeling relaxed, invigorated, closer to members of one's group or family, more self-reliant/confident, or more knowledgeable about something (Lee and Driver, 1992). This approach to recreation postulates that recreation outcomes are produced and realized by individuals. Managers have the ability to manipulate recreation settings which can directly or indirectly influence recreation behavior that results in visitor-produced recreation experiences and benefits (Brown, 1984). Therefore, this approach

facilitated a more systematic understanding of the role of recreation setting attributes in creating not only activity opportunities, but also experience opportunities. Forest recreation managers can manipulate the physical, social, and managerial setting characteristics to provide visitors the opportunity to achieve desired experiences. The Recreation Opportunity Spectrum (ROS), a recreation management framework is based on the premise the providing a diversity or spectrum of recreation opportunities through management of recreation settings will help ensure that a variety of visitors will be able to achieve desired recreation experiences (Stein and Lee, 1995).

BBM is the logical extension of experience-based management and is based on the ideas that (1) the reason public recreation opportunities are provided is because people benefit from them and (2) management will be most responsive, efficient, and effective when it explicitly targets specific types of benefit opportunities that will be provided at designated locations. This is done by providing activity and associated setting opportunities defined in terms of the beneficial experiences and other responses that can be realized from using those opportunities. In other words, BBM expands experience-based management to look not only at individual recreation benefits, but also social, economic, and environmental benefits. For example, people can improve their cardiovascular systems while hiking (Froelicher and Froelicher, 1991), they can learn more about the environment while experiencing the outdoors (Roggenbuck et al., 1990), or strengthen family bonds while camping (Orthner and Mancini, 1991). In summary, BBM focuses on what is obtained from forest recreation opportunities in terms of consequences that maintain or improve the lives of individuals and groups of individuals, and then designs and provides opportunities to facilitate realization of those benefits. The basic purpose is to provide an array of benefit opportunities among which users can choose. Several benefits opportunities can be targeted for the same site. Benefits are, therefore, the outputs around which recreation managers need to design management actions.

In order to provide opportunities for recreationists

to achieve benefits or good quality of recreation experiences, managers should have some knowledge of the relationship between resource characteristics and benefit outcomes (Stein and Lee, 1995). Basically, in this process, managers have to understand which and how the specific resource characteristics influence on recreationists' experiences and benefits. However, the recreation setting-experience/outcome relationship is extremely difficult to determine and has been the focus of a number of research efforts. To understand this relationship between resource characteristics and experiences/benefits, managers have to first identify resource indicators including physical/biological, social and managerial aspects. Managers seeking to monitor recreationists' benefits in forest recreation settings have increasingly looked to the use of indicators, which are defined as specific elements which influencing on the benefits. Therefore, the overall purpose of this study was to identify and evaluate indicators which offer the significant influence on recreationists' experiences using delphi survey technique with a panel of professionals. Specifically, this study was aimed (1) to develop a set of criteria to guide the identification and evaluation of indicators and (2) to consult a panel of professionals representing the relevant areas to identify and evaluate potential indicators in terms of the set of criteria which reflect properties indicators should met.

METHODS

1. Research Design (Delphi Survey)

The delphi technique is a method for structuring communication in a process that allows a group of individuals to deal with a complex problem and reach consensus (Linstone and Turoff, 1975; Zuboy, 1980). The process involves the use of a series of questionnaire sent by mail in several rounds to a respondent group of experts who remain anonymous. The first questionnaire asks panel members to respond to a broad question and subsequent question-naires build on the responses to the preceding questionnaire. The Delphi technique normally seeks consensus of opinion among panel members but can be stopped whenever sufficient information exchange is attained (Delbecq, 1975).

A major advantage of the Delphi technique is that it avoids problems commonly encountered in face-to-face group meetings. These problems include the influence of key persons on the responses of other panel members as well as the geographical constraints and costs of bringing together a group of experts (Rainhorn et al., 1994).

Although originally developed by the Rand Corporation for technology forecasting, Delphi has since been applied to a variety of studies and is commonly used to improve decision-making (Delbecq., 1975). In natural resource management, Delphi studies have been used to select indicators to monitor long-term change in riparian areas (Noon, 1982), select indicators to include in a water quality index and assign quality curve and a weighted significance to each indicator (Brown, 1972), identify events that will shape the future of outdoor recreation (Moeller, 1975), select indicators to monitor wilderness condition (Merigliano, 1987), and select criteria for land-use zoning in National Parks of Korea (Kim et. al., 1998).

2. Selection of participants

A list of 17 persons with substantial expertise in forest recreation was prepared to serve as the respondent group. As it shown in Table 1, the group included persons from research and managerial fields. Studies have shown that the average group error decrease as the number of panel members increase, however there is very little reduction in group error after about 13 to 15 panel members (Fusfield and Foster, 1971). Therefore, in this survey, 16 with highly committed members of group was employed.

Table 1. Distribution of Participants' Organizational Affiliation

Organization	Number of Participants
University	9
National Parks	3
Recreational Forests	2
Forestry Administration	2
Forest Research Institute	1

3. Data Collection

Delphi studies typically undergo two or three

rounds of surveys (1) to explore the subject under discussion, (2) to attempt to reach an understanding of how the group views the issue, and (3) to bring out the underlying reasons for differences or dis‐agreement and possibly evaluates them (Merigliano, 1987). In this study, three-round delphi survey was employed by previous studies' recommendation (Kim, et al., 1998; Merigliano, 1987).

All questionnaires used in this study followed guidelines developed by Dillman (1978). During the May and June of 1999, three rounds of surveys were conducted through the postal system. Post cards reminders were mailed to each panel member one week after the initial mailing. Panel members who did not respond after two weeks were telephoned. The completed questionnaires were collected by mail, e-mail or fax.

RESULTS AND DISCUSSIONS

1. First Round Survey

In the first round of the survey, all 17 panel members sent completed questionnaires. Question‐naire one asked to participants to identify indicators that could be used to monitor forest recreationists' experiences. More than 223 indicators were sub‐mitted. These preliminary indicators were grouped into 54 separate indicators under the three categories (i.e., physical and biological, managerial and social categories) (Table 2).

2. Second Round Survey

In Questionnaire Two, each panel member was asked to select twenty out of the 54 indicators from the results of first round survey they felt best met. Responses to this questionnaire generated a rank order of indicators based on the frequency of selection (Table 3).

As it can be seen from the Table 3, four indicators from the first round survey such as 'topography', 'image of resources', 'opportunity for participation', and 'number of company' were deleted. Therefore, 50 indicators were identified from the second survey.

3. Third Round Survey

In the third round of the survey, the respondents were asked to rank the ten most important

Table 2. Responses of Questionnaire One

Category	Indicator	No. of responses
Physical/ Biological (19)	Beautiful forests	16
	Accessibility	13
	Clean waters/valley	11
	Wildlife	8
	Environmental friendly facilities	7
	Impact	7
	Climate condition	6
	Biodiversity	5
	Slope/Height	4
	Cultural resources	4
	Outlook	2
	Rocks	2
	Sounds by nature	2
	Topography	1
	Nature trail	1
	Succession	1
	Harmony with surroundings	1
	Forest density	1
	Image of resources	1
Managerial (19)	Kindness of rangers	14
	Cleaning of facility	13
	Interpretation	11
	Visitor management	8
	Diversity of programs	6
	Entry fee	6
	Safety	6
	Incidental facility	6
	Littering	5
	Public Relation	5
	Comfort	5
	Maintenance of trail	4
	Maintenance of scenic beauty	3
	Systematic management	2
	Information	2
	Name label for each tree	1
	Opportunity for participation	1
	Government support	1
	Forest practice	1
Social (16)	Crowding	6
	Number of encounters	5
	Public order or disorder	5
	Economic condition	3
	Residences' attitudes	3
	Type of company	3
	Personal characteristics	3
	Number of company	1
	Famousness of the area	1
	Kindness by other visitors	1
	Activities by other visitors	1
	Special resources in region	1
	Length of stay	1
	Class of visitors	1
	Perception of impact in the area	1
	Activities in the area	1

Table 3. Responses of Questionnaire Two

Category	Indicator	No. of responses
Physical/ Biological (17)	Beautiful forests	16
	Clean waters/valley	16
	Accessibility	15
	Biodiversity	13
	Environmental friendly facilities	12
	Impact	8
	Climate condition	6
	Outlook	6
	Nature trail	6
	Wildlife	5
	Cultural resources	5
	Sounds by nature	5
	Rocks	3
	Harmony with surroundings	3
	Forest density	3
	Slope/Height	1
	Succession	1
Managerial (18)	Kindness of rangers	16
	Interpretation	15
	Cleaning of facility	14
	Diversity of programs	11
	Littering	10
	Information	9
	Entry fee	8
	Maintenance of trail	8
	Maintenance of scenic beauty	7
	Visitor management	7
	Comfort	6
	Systematic management	5
	Safety	5
	Incidental facility	3
	Name label for each tree	3
	Forest practice	3
	Public Relation	2
	Government support	1
Social (15)	Crowding	15
	Public order or disorder	12
	Number of encounters	7
	Economic condition	6
	Residences' attitudes	5
	Type of company	5
	Personal characteristics	4
	Special resources in region	4
	Kindness by other visitors	3
	Class of visitors	3
	Perception of impact in the area	3
	Activities by other visitors	2
	Length of stay	2
	Famousness of the area	1
	Activities in the area	1

indicators out of the 50 indicators from the second round survey. Sixteen of the seventeen panel members responded Questionnaire Three. Twelve indicators out of 50 such as number of encounters, residents' attitudes, incidental facility, kindness by other visitors, class of visitors, perception of impact in the area, public relations, activities by other visitors, slope/height, government support, famousness, and activities in the area were not ranked by all panel members. Therefore 38 indicators were selected. Each selected indicator was weighted and summed according to the rank by the panel members. Table 4 shows the result. As it can be seen in the Table, 16 physical/biological, 15 managerial and 7 social categories of indicators were included in the final round survey.

4. Analysis of Importance

Thirty-eight indicators were finally selected through three rounds of panel surveys. To analyze importance, each selected indicator was classified into 4 categories according to weighted total votes (ie, I $=100 \sim 76\%$; II $=75 \sim 51\%$; III $=50 \sim 26\%$; IV $= 25 \sim 0\%$). Four category classification is employed in this study because most of the previous studies suggested as meaningful tool. In the third round survey, 17 panel members ranked 1 to 10 indicators based on the importance (10 points for the most important indicator). Therefore, possible maximum scores an indicator could be obtained was 170 points. One hundred seventy point was calculated as 100% in this analysis. Table 5 indicates the result of the analysis.

As it can be seen from the Table 5, one indicator titled 'beautiful forests' was included in Class I. Fifteen out of sixteen panel member ranked this indicator as the most important indicator. In Class II, indicator titled 'Clean waters/valley' was included. In the III and IV Classes, three and thirty-three indicators were included respectively. Although indicators such as 'biodiversity' and 'Environmental friendly facilities' are included in IV Class, these indicators' percentile are much higher than that of other indicators in the same class. Therefore, it should be keep in mind in interpreting this result.

Table 4. Responses of Questionnaire Three

Category	Indicator	Weighted total votes	Rank
Physical/Biological (16)	Beautiful forests	159	1
	Clean waters/valley	113	2
	Accessibility	55	4
	Biodiversity	39	8
	Environmental friendly facilities	35	9
	Impact	14	14
	Nature trail	14	14
	Outlook	13	16
	Sounds by nature	12	19
	Climate condition	9	21
	Cultural resources	9	21
	Succession	4	30
	Rocks	3	31
	Forest density	3	31
	Harmony with surroundings	2	33
	Wildlife	2	33
Managerial (15)	Kindness of rangers	77	3
	Interpretation	42	6
	Cleaning of facility	40	7
	Entry fee	28	10
	Diversity of programs	27	11
	Information	24	12
	Systematic management	16	13
	Maintenance of trail	13	16
	Maintenance of scenic beauty	13	16
	Littering	12	19
	Comfort	8	23
	Visitor management	7	25
	Forest practice	7	25
	Safety	5	29
	Name label for each tree	1	35
Social (7)	Crowding	48	5
	Special resources in region	8	23
	Public order or disorder	7	25
	Type of company	6	28
	Economic condition	1	35
	Personal characteristics	1	35
	Length of stay	1	35

5. Discussions

The goal of this study was to bring together current information from relevant disciplines to identify indicator which could be used to monitor outdoor recreationists' experiences. The Delphi method could be useful as a first step in identifying indicators which warrant further attentions.

Throughout the three rounds of surveys, 38 indicators to monitor recreation experiences identified. Among the total 38 indicators, 16 indicators were related to physical/biological, 15 indicators were related to managerial, and 7 indicators were related to social aspects (Table 4). Regarding to the importance of selected indicators, three out of five

Table 5. Analysis of importance for the selected indicators

Class[1]	Category	Indicator	Percentile (%)[2]
I (1)	Physical/Biological	Beautiful forests	94
II (1)	Physical/Biological	Clean waters/valley	66
III (3)	Physical/Biological	Accessibility	32
	Managerial	Kindness of rangers	45
	Social	Crowding	28
IV (33)	Physical/Biological (13)	Biodiversity	24
		Environmental friendly facilities	21
		Impact	8
		Nature trail	8
		Outlook	8
		Sounds by nature	7
		Climate condition	5
		Cultural resources	5
		Succession	2
		Rocks	2
		Forest density	2
		Harmony with surroundings	1
		Wildlife	1
	Managerial (14)	Interpretation	25
		Cleaning of facility	23
		Entry fee	16
		Diversity of programs	16
		Information	14
		Systematic management	9
		Maintenance of trail	8
		Maintenance of scenic beauty	8
		Littering	7
		Comfort	5
		Visitor management	4
		Forest practice	4
		Safety	3
		Name label for each tree	0
	Social (6)	Special resources in region	5
		Public order or disorder	4
		Type of company	4
		Economic condition	0
		Personal characteristics	0
		Length of stay	0

[1] I = 100~76%; II = 75~51%; III = 50~26%; IV = 25~0%
[2] Percentile was calculated based on ranking scores. 100% represents 170 points.

indicators included in I and II Classes were categorized in physical/biological components (Table 5). This result indicates that physical/biological indicators should be considered as important component in planning and managing forest recreation resources.

Even though the Delphi study identified indicators which could be used to monitor recreational experiences, it should be careful to employ to specific recreational area. For example, certain recreation area which has a significant cultural or historic heritage may more important than any other indicators identified in this study. Therefore, for application to specific recreation area, the indicators identified in this study should be evaluated based on the specific conditions which the area has. The results of this study can provide managers general information about indicators which can influence on recreationists' benefits. Therefore, managers can modify the indicators to adapt to their settings.

As mentioned before, physical/biological aspects of indicators were mainly emphasized by the panel members in the third questionnaire. Because of limit number of indicators to select (ie., ten most important indicators in this study), the panel member might consider physical/biological components of indicators at first.

This study is only a first step in identifying and evaluating potential indicators to monitor outdoor recreationists' experiences to use as a basic information for benefits-based management model. Research is needed to develop accurate measurement scale and field test the indicators identified in this study for the management model.

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