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# A Study on the Differences in the Cognition of the Visitor-Reservation System: Focused on Uiryeong-Gil Area in Bukhansan National Park

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## Abstract

This study aims to verify a difference between the years 2014 and 2019 of Uiryeong-Gil, which is operated by the Visitor-Reservation System, in terms of the cognition of system, operational effectiveness, and behavioral intention. The analysis is as follows. First, among the overall cognition of the Visitor-Reservation System, the satisfaction from - prevention for safety for accident, expansion to other parks, number of visitor restriction, and satisfaction with reservation method - increased compared to 2014. Second, among the effects of the Visitor-Reservation System operation, satisfaction shows differences in year-to-year levels in terms of resource protection, resource damage mitigation efficiency, natural experience opportunity, comfort of visit-environment, and prevention of illegal activities. Third, the analysis of the differences in the behavior of the Visitor-Reservation System showed that the satisfaction of visitors, revisit intention, and overall satisfaction differed per year. The results of this study are meaningful in that the Visitor-Reservation System is no longer the restriction, but the change in cognition for the protection of ecosystems and sustainable visiting in order to expand the Visitor-Reservation System into a sustainable policy.

**Key Words:** national park, Uiryeong-Gil, Visitor-Reservation System, cognition of visits, behavior intention

## Introduction

Visitors to Korea's national parks mostly have the purpose of leisure and recreation: To enjoy natural resources and improve physical strength. The national park is a space that enables the conservation of healthy ecosystems and the sustainable use of beautiful resources, so it is a priority to seek effective management through appropriate policy. Protected area-based ecotourism is now the most interesting topic to the nature lover and policy maker throughout the world because of its linkage with economic benefits, protected area management and biodiversity conservation (Rahman et al. 2013).

In Korea, in accordance with Article 28 of the Natural Parks Act, the National Park Authority designated a certain area as a reservation section to limit the number of visitors, and if it is to be restricted, it posts a notice on the Internet website in advance and installs the signboard. As of 2019, the tour reservation system is operated in 18 sections of the National Park, from the Chiseon Valley in Jirisan to the Myokryeong and Jukryeong in Sobaeksan National Park. The entry limit is 60 people per day and up to 7,000 people

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per day.

In this study, we used the factor that is cognition, satisfaction and behavior intention. Cognition is the behavior of identifying and judging objects and generally the concept of things or the process of obtaining the concept. In general, it is common to investigate the cognition of users when new businesses or changes are introduced, and their cognition decides whether to continue the project. National parks can investigate the cognition of visitors who use natural resources and services to identify factors that may affect Satisfaction and future revisits. Behavioral intention can be defined as individual wills and beliefs that lead to a particular future behavior of consumers and can be a comprehensive concept that describes the outcome of customer satisfaction (Han and Hyun 2009; Choi and Kim 2012; Shin 2012; Hyun 2016). Behavioral intention is called as revisit intention in the case of tourist attractions, and the most comprehensive term is behavioral intention (Choi 2005; Choi 2018). If the overall tourist satisfaction is an overall assessment of the visiting experience, the recommendation intention can be an evaluation of visiting experience or tourism products. The recommendation for a revisit is considered to be a type of positive oral tradition, and the recommendation intention is to inform others of their specific experiences or services based on their positive tourism experience. In the study of tourism, behavioral intention was also used as a concept encompassing the intention of revisiting and recommending, and behavioral intention is discussed as a satisfactory resultant variable; the revisiting intention and positive recommendation have been discussed (Kim and Hwang 1999). Overall, with the satisfaction of tourism, the revisiting intention and the recommendation intention has been defined as the psychological variable that is followed by tourism experience. In this study, cognition is defined as an assessment of the object after using the Uiryeong-Gil Visitor-Reservation System, and the behavioral intention is defined as the satisfaction of visitors to Uiryeong-Gil, the willingness to revisit and recommend to others, and the overall satisfaction of each year. And the study finds out the differences by year (Hwang 2014).

Korea National Park Service implements a Visitor-Reservation System to provide natural protection, pleasant visiting and environment, and safety for visitors to areas of high ecological and scenic value through control of the number of visitors. Since recreational activities in nature aim to offer visitor benefits and enjoyment, park management should consider about establishing a higher visitor satisfaction level and motivate visitors to participate in recreational activities (Wagar 1964). Korea National Park Service added two sections (Nogodan on Jiri National Park and Uiryeong on Bukhansan National Park) in 2009 starting with one section (Chilseon Valley on Jiri Natinal Park) in 2008, and operated a total of 15 sections at the end of 2018. In 2019, the company was operating a total of 14.6 kilometers of three new trails (Jukryeong section on Sobaeksan National Park Myojukryeong, Jeongunjae section on Chiaksan National Park Visitor Center, and Hwangjangsan section on Wolaksan National Park Ansaengdal). In 2019, it increased the number of operating by 185 days, lead to a convenient visiting culture through the introduction of an automated reservation system.

This reservation system allows visitors to be satisfied in terms of utility by controlling the number of visitors; to achieve natural protection in terms of conservation. In other words, it can be an advantage to advanced visiting culture. However, the beautiful nature of the national park has a public source. The negative side is that visitors who fail to reserve are violated their rights and freedoms. However, the Visitor-Reservation System, which admits the ecological capacity of nature to accommodate, can serve as a system for sustainable visiting. Wager (1964)'s concept of capacity is "a level of utilization that can be maintained while providing a continuous, high-quality visiting experience in an area". In particular, ecological capacity is the maximum population density that can be maintained without degradation of the environment in a particular area, meaning the visiting level, the extent to which food, soil, water resources, and extent that wildlife is severely damaged so lose their recovery (Kim and Kim 2003). The rapid increase in the number of visitors to the national park lead to excessive use of trails, resulting in human trampling, which leads to an increase in soil hardness and water accumulation during rainfall. In addition, if external energy continuously interferes into hiking trail, it causes the invasion of alien species that are not allowed to live, which eventually leads to ecological disturbance. These damaged hiking trails will cause forest destruction, such as fires. Thus, such, appropriate management should be applied to increase the demand for

visiting national parks, improve problems with visitor's behavior, and for safety in national parks as well as the culture of visiting national parks (Choe et al. 2017). Understanding visit motivation to parks is important when attempting to improve visitor satisfaction and their intentions to revisit and recommend (Sim et al. 2018). Motivation is "the source of satisfaction for engaging in a behaviour" (Janes 2006, p.28); learning is one of the most critical factors in recognizing individual's motivation and behavior (Wagar 1964). As such, it is necessary to understand visitors' perceptions of changes over time in the tour reservation system after implementing the Visitor-Reservation System. In this regard, national parks are also representative of public facilities. Some of the facilities (the shelters) are designated as special protection zones. And, in the event of a potential threat to the safety of visitors, such as damage caused by natural disasters, decayed facilities, and falling rocks, it restricts visits (Lee et al. 2015), In particular, Uiryeong-Gil on Bukhansan National Park, Visitor-Reservation System was established in 2009 with a 4.5-kilometer-long, which accommodates 500 visitors a day and 182,500 a year. Although such a Visitor-Reservation System is a useful means of managing parks, the quality of the tour activities can be determined by way of pre-reservation, and it can affect the behavior of the visitors.

A difference which compared the previous study of the study are as followings. First, this study investigated policy cognition of time-lag between 2014's and 2019's visitor-reservation system. Variations and changes of opinion on visitors have a meaningful content for Korea National park sites. In 2014, Visitor-Reservation system is somewhat difficult and closed for visitors. However, in 2019, this opinion could more open and protectable policy for national park than before. Second, this study is more focused on practical sites than theoretical prospect. The study has lots of practical aspect and view-point. It means that this research could easily generalize the results for many national park sites.

The purpose of this study is as follows. First, it is to analyze the differences in the overall cognition, behavioral intention, and post-cognition of the Visitor-Reservation System in Uiryeong-Gil area, which is operated as a Visitor-Reservation System, and second, it is to verify changes in the cognition of the tour reservation system. Finally, the study is to provide basic data necessary to expand to management systems and policies.

## Materials and Methods

### *Study site*

Uiryeong-Gil, a six-meter-wide unpaved road connecting Jangheung-myeon in Yangju, Gyeonggi Province, passes "Wooiam, which resembles a cow ear" and Ui-dong in northern Seoul, is located between the Sangjang ridge and Songchu Nam ridge. During the Korean War, it was opened as an operational road by U.S. engineers battalion and began to control civilian access with the presence of military units and combat police in 1969 following the 1.21 incident in 1968. However, Seoul City and Yangju City decided to expand the road as part of urban development in 1994, and Yangju County designated it as the 13th line of the archipelago in 1996, and after it was promoted to Yangju in 2003, it is re-designated it as the 16th line of the city in 2006. In response to such development, the civic group "Uiryeong Conservation Society" has opposed the development of Uiryung-Gil since 1994 to publicize the importance of preserving Uiryeong. After adjusting the acute tension between development and preservation, the National Park Service implemented a tour reservation system as an alternative to sustainable use while preserving Uiryeong, the best ecosystems (Korea National Park Service 2016). As such, Uiryeong-Gil was used as a road for horse-riding long ago and; as an escape route during the Korean War as a road for military operations after the armistice as a road for military operations after the Korean War. This is an ecological trail that was opened in 41 years after being environmentally friendly in July 2009 (Korea National Park Service 2015a).

Visitor-Reservation System for Uiryeong-Gil on Bukhansan National Park is implemented throughout the year, and the number of people making reservations is 500, which is used by 182,500 people a year. In addition, it recently introduced an access control system for the trails in 2019, helping visitors to be more convenient. Pre-booking can be done by both the Internet and on-site reception on the same day. In the event of a vacancy in advance, on-site reservations are available on a first-come, first-served basis. However, when entering into the region is restricted due to heavy weather or

typhoon (including breaking news) or natural disasters, reservations are automatically canceled. In this case, SMS is automatically sent. In the case of Uiryeong-Gil, the number of visitors in 2017 and 2018 decreased slightly from 37,818 to 33,348. This is the result of the decline in the climbing population.

**Table 1.** Participant profile

| Item | | 2014 | | 2019 | |
|---|---|---|---|---|---|
| | | n | % | n | % |
| Gender | Male | 69 | 44.2 | 134 | 47.5 |
| | Female | 87 | 55.8 | 148 | 52.5 |
| | Total | 156 | 100.0 | 282 | 100.0 |
| Age group | 18-29 years old | 7 | 4.5 | 27 | 9.4 |
| | 30-39 years old | 39 | 25.1 | 32 | 11.1 |
| | 40-49 years old | 48 | 31.0 | 66 | 23.1 |
| | 50-59 years old | 41 | 26.5 | 108 | 37.6 |
| | 60 years old and over | 20 | 12.9 | 54 | 18.8 |
| | Total | 155 | 100.0 | 287 | 100.0 |
| Monthly household income (KRW) | Less than 1 million | 1 | 0.7 | 5 | 1.8 |
| | 1-2 million | 9 | 6.0 | 11 | 4.1 |
| | 2-3 million | 26 | 17.2 | 54 | 19.6 |
| | 3-4 million | 27 | 17.9 | 31 | 11.3 |
| | 4-5 million | 29 | 19.2 | 46 | 16.7 |
| | Over 5 million | 59 | 39.0 | 128 | 46.5 |
| | Total | 151 | 100.0 | 275 | 100.0 |
| Occupation | Owner/self-employed | 12 | 7.8 | 47 | 16.6 |
| | Professional worker | 22 | 14.3 | 42 | 14.8 |
| | Officer/teacher | 11 | 7.2 | 25 | 8.8 |
| | Agricultural/forestry/livestock industry | - | | 1 | 0.4 |
| | Student | - | | 13 | 4.6 |
| | Homemaker | 27 | 17.5 | 28 | 9.9 |
| | Company worker | 59 | 38.3 | 91 | 32.2 |
| | Unemployed/other | 23 | 14.9 | 36 | 12.7 |
| | total | 154 | 100.0 | 283 | 100.0 |
| Residence | Seoul | 110 | 70.6 | 199 | 69.8 |
| | Busan | - | - | 1 | 0.4 |
| | Daegu | 1 | 0.6 | - | - |
| | Incheon | 6 | 3.8 | 8 | 2.8 |
| | Gwangju | - | - | 1 | 0.4 |
| | Gyeonggi-do | 39 | 25.0 | 72 | 25.2 |
| | Chungcheongnam-do | - | - | 2 | 0.7 |
| | Jeollabuk-do | - | - | 2 | 0.7 |
| | Total | 156 | 100.0 | 285 | 100.0 |
| Education level | Elementary school | - | - | 3 | 1.1 |
| | Middle school | 2 | 1.3 | 4 | 1.4 |
| | High school | 38 | 24.5 | 58 | 20.4 |
| | Bachelor's or higher degree | 115 | 74.2 | 219 | 77.1 |
| | Total | 155 | 100.0 | 284 | 100.0 |

Note: 1 USD 1 is equivalent to 1,200 Korean Won is equivalent to 1 US dollar.

### *Instrument*

The questionnaire was designed by the Korea National Park Service and previous studies. The variables utilized for the questionnaire were focused on management needs of national park and were based on a literature review, and feedbacks from researchers and park practitioners. The questionnaire has four feature: cognition, operational effect of visitor-reservation service and behavior intention, socio-demographics. First, cognition of visitor-reservation service included eight items: natural protection contribution, safety for accident, satisfaction with reservation interval, execution with servations (Lee et al. 2003). Second, six items assessed visitor's satisfaction with park attributes, services and facilities: protection, damage mitigation, trails, experience opportunity and environment, prevention of illegal activities (Lee et al. 2015). Third, behavior Intention included four items: visit satisfaction, revisit intention, recommendation intention and overall satisfaction (Han and Hyun 2009; Choi and Kim 2012; Shin 2012; Hyun 2016). All variable was measured using a five-point scale (1=Strongly disagree, 2=Disagree, 3=Neither disagree nor agree, 4=Agree, 5=Strongly agree). Forth, the respondents' socioeconomic characteristics included five items, e.g., age, household income, occupation, residence and education level.

### *Data collection and analysis*

The on-site survey of this study was conducted on a total of 443 visitors to Uiryeong-Gil area on Bukhansan National Park in 2014 (n=156) and in 2019 (n=287). The staff of Korea National Park Service collected the data from the national park visitors who participated in the same period as of July, 2014 and 2019 (summer peak season) and October-November, 2014 and 2019 (fall peak season). The survey utilized the self-administered questionnaire. To carry out this study, two sets of data (2014 and 2019) were available to study demographic characteristics, the cognition of reservation and behavioral intention and the post-cognition. SPSS program was used for descriptive analysis and difference analysis were conducted.

## Results

### *Participant profile*

As shown in Table 1, the gender of respondents was 44.2% for men and 55.8% for women in 2014 and 47.5% for men and 52.5% for women in 2019. By age group, 26.5% in their 50s, 31.0% in their 40s, 12.9% in their 60s and older in 2014 and 37.6% in their 50s, 23.1% in their 40s, 18.8% in their 60s and older, 11.1% in their 30s, and 9.4% in their 20s in 2019. In the case of education, 24.5% of high school graduates and 74.2% of university graduates or higher were found in 2014 and 20.4% of high school graduates and 77.1% of university graduates or higher were found in 2019 and the average monthly income per household (sum of household member income) is 46.5% of 5 million Korean Won (KRW) or more, 16.7% of less than 4-5 million KRW, and 19.6% of less than 2 to 3 million KRW were the highest, followed by 11.3% of less than 3-4 million KRW in 2019 and 39.0% of 5 million Korean Won (KRW) or more, 19.2% of less than 4-5 million KRW, and 17.2% of less than 2 to 3 million KRW were the highest, followed by 17.9% of less than 3-4 million KRW, and 6.0% of less than 1 million to 2 million KRW in 2014. The residence was highest in the order of Seoul 70.6%, Gyeonggi-do 25.0%, and Incheon 3.8% in 2014 and Seoul 69.8%, Gyeonggi-do 25.2%, and Incheon 2.8% in 2019.

### *Results on the differences analysis in cognition of visitor-reservation system*

A t-test of eight questions was conducted to determine the difference between the cognition of the Visitor-Reservation System in 2014 and 2019, and there were significant differences in several factors per year. By year, the four attributes of safety for accident, expansion to other parks, number of visitor restriction and satisfaction with reservation were found to be significant, and the four optional attributes of natural protection contribution, satisfaction with reservation area, desirability of the reservation system, and cognition of regulations were all not significantly different. The following Table 2 shows the differences in the year-by-year Visitor-Reservation System.

**Table 2.** T-test results of the differences in cognition of Visitor-Reservation System

| Items | Year | n | Mean | SD | t-value | p-value |
|---|---|---|---|---|---|---|
| Natural protection contribution | 2014 | 156 | 4.1 | 0.777 | -0.371 | 0.711 |
| | 2019 | 290 | 4.13 | 0.893 | | |
| Safety for accident | 2014 | 156 | 3.88 | 0.762 | -2.046 | 0.041* |
| | 2019 | 290 | 4.04 | 0.778 | | |
| Satisfaction with reservation area | 2014 | 156 | 3.84 | 0.769 | -0.663 | 0.507 |
| | 2019 | 290 | 3.89 | 0.838 | | |
| Desirability of the reservation system | 2014 | 156 | 3.92 | 0.924 | -1.756 | 0.080 |
| | 2019 | 290 | 4.08 | 0.915 | | |
| Cognition of regulations | 2014 | 156 | 2.9 | 1.106 | 1.012 | 0.312 |
| | 2019 | 290 | 2.78 | 1.168 | | |
| Expansion to other parks | 2014 | 156 | 3.57 | 1.036 | -2.468 | 0.014* |
| | 2019 | 290 | 3.82 | 0.932 | | |
| Number of Visitor restriction | 2014 | 156 | 3.67 | 0.988 | -1.968 | 0.050* |
| | 2019 | 290 | 3.86 | 0.892 | | |
| Satisfaction with reservation | 2014 | 156 | 3.78 | 0.806 | -2.263 | 0.024* |
| | 2019 | 288 | 3.96 | 0.741 | | |

Notes: *Significant at $p < 0.05$. SD, standard deviation. Items were measured on a 5-point scale: 1, strongly disagree; 2, disagree; 3, neither disagree nor agree; 4, agree; 5, strongly agree.

**Table 3.** T-test results of the differences in operational effect of Visitor-Reservation System

| Items | Year | n | Mean | SD | t-value | p-value |
|---|---|---|---|---|---|---|
| Natural protection management efficiency | 2014 | 154 | 3.98 | 0.661 | -2.076 | 0.039* |
| | 2019 | 283 | 4.12 | 0.736 | | |
| Resource damage mitigation efficiency | 2014 | 154 | 3.84 | 0.82 | -3.883 | 0.001** |
| | 2019 | 283 | 4.14 | 0.759 | | |
| Trail management efficiency | 2014 | 154 | 4.02 | 0.661 | -1.537 | 0.125 |
| | 2019 | 282 | 4.13 | 0.772 | | |
| Nature experience opportunity | 2014 | 154 | 3.92 | 0.832 | -2.653 | 0.008** |
| | 2019 | 283 | 4.12 | 0.734 | | |
| Comfort of visit-environment | 2014 | 154 | 4.07 | 0.776 | -2.761 | 0.006** |
| | 2019 | 282 | 4.28 | 0.722 | | |
| Prevention of illegal activities | 2014 | 154 | 3.99 | 0.863 | -2.685 | 0.008** |
| | 2019 | 282 | 4.20 | 0.763 | | |

Notes: *Significant at $p < 0.05$, **Significant at $p < 0.01$, ***Significant at $p < 0.001$. SD, standard deviation. Items were measured on a 5-point scale: 1, strongly disagree; 2, disagree; 3, neither disagree nor agree; 4, agree; 5, strongly agree.

### *Results on the differences analysis in operational effect of the visitor-reservation system*

Six questions were t-tested to identify differences in the operational effectiveness of the Visitor-Reservation System after reservation in 2014 and 2019, and there were significant differences in only a few questions per year. By year, the five questions of natural protection management efficiency, resource damage mitigation efficiency, nature experience opportunity, comfort of visit-environment, and prevention of illegal activities were found to be significant and the remaining one, trail management, did not show a significant difference. The following Table 3 shows the items that differ in the operational effect of the Visitor-Reservation

System by year.

### *Results on the differences analysis of the behavioral intention of the visitor-reservation system*

In 2014 and 2019, the t-test of four questions was conducted to identify differences in Satisfaction, revisit, and behavior for each year's Visitor-Reservation System and significant differences were shown for several factors per year. By year, the three questions of visit satisfaction, revisit intention, and overall satisfaction were found to be significant, while the recommendation intention was not significant. The following Table 4 shows the differences in the behavioral intention of the year-by-year Visitor-Reservation System.

## Conclusion and Discussion

This study analyzed the differences in the cognition, operational effectiveness, and behavioral intention of the visitor reservation system on Uiryeong-Gil, which is operated as a Visitor-Reservation System, and conducted simultaneous surveys of the same questions in 2014 and 2019 to analyze the differences in the cognition of the Visitor-Reservation System, and the results are as follows.

First, looking at the change in the cognition of the Visitor-Reservation System, in 2019, compared to 2014, visitors perceive that it contributes to the Prevention of safety accidents through the Visitor-Reservation System. This was measured on a 5-point Likert scale in 2014, and rose from 3.88 to 4.04 in 2019. In addition, the number of points increased from 3.57 to 3.82 in 2014 for the cognition that the reservation system should be expanded to other parks. The question of Satisfaction with the appropriate number of population also rose from 3.67 points to 3.86 points in 2014. Finally, satisfaction with the reservation method also increased from 3.78 in 2014 to 3.96 points.

Second, in 2019 compared to 2014, a total of six questions, including nature protection management and mitigation of damage to resources, five questions, excluding the question of managing the trail, showed differences over the year. The question that the Visitor-Reservation System has a resource protection management effect rose from 3.98 in 2014 to 4.12. The mitigation of damage to resources rose from 3.84 to 4.14, and the experience opportunity rose from 3.92 to 4.12. The cognition of a pleasant environment through the Visitor-Reservation System rose from 4.07 in 2014 to 4.28 points. Finally, the prevention of illegal activities rose from 3.99 in 2014 to 4.20 points.

Third, regarding the behavioral intention under the Visitor-Reservation System, visitors in 2019 showed a difference in visit satisfaction, revisit intention, and overall visit satisfaction in 2019 compared to 2014. Visit satisfaction rose from 4.04 to 4.22 points, and revisit intention rose from 4.04 points in 2014 to 4.21 points, and overall visit satisfaction is 4.10 points from 3.92 points in 2014.

Summarizing the results, it was found that the difference - in cognition between 2014 and 2019 regarding the implementation of the Visitor-Reservation System - appeared in many fields. In other words, the cognition of Visitor-Reservation System is changed: rather than simply taking

**Table 4.** T-test results of the behavioral intention of the Visitor-Reservation System

| Items | Year | n | Mean | SD | t-value | p-value |
|---|---|---|---|---|---|---|
| Visit satisfaction | 2014 | 156 | 4.04 | 0.675 | -2.69 | 0.008** |
| | 2019 | 288 | 4.22 | 0.641 | | |
| Revisit intention | 2014 | 156 | 4.04 | 0.666 | -2.46 | 0.014* |
| | 2019 | 289 | 4.21 | 0.687 | | |
| Recommendation intention | 2014 | 155 | 4.15 | 0.666 | -1.9 | 0.058 |
| | 2019 | 288 | 4.27 | 0.612 | | |
| Overall satisfaction | 2014 | 155 | 3.92 | 0.729 | -2.179 | 0.007** |
| | 2019 | 286 | 4.1 | 0.678 | | |

Notes: *Significant at $p < 0.05$, ** Significant at $p < 0.01$. SD, standard deviation. Items were measured on a 5-point scale: 1, strongly dissatisfied; 2, dissatisfied; 3, neither dissatisfied nor satisfied; 4, satisfied; 5, strongly satisfied.

away the opportunity to visit, it contributes to preventing accidents, and furthermore, the system can expand to other parks in a positive way. In addition, it is judged that the limit of the number of people is appropriate, and the reservation method also increased Satisfaction in 2019 compared to 2014. As such, the cognition of the tour reservation system can be seen as a positive system over the years. Also, through the reservation system, visitors' satisfaction with visiting, revisit intention, and overall satisfaction is increasing compared to 2014. Finally, in terms of resource protection, resource damage mitigation, experience opportunity, environment, and illegal activities, the operational effects felt by visitors through Visitor-Reservation System were found to be positive in 2019 compared to 2014.

Therefore, the following implications can be deduced in order for the Visitor-Reservation System to be settled as a useful park management policy and to be expanded to other parks or regions. First, there was no difference in the Visitor-Reservation System between 2014 and 2019 in Uiryeong-Gil in terms of nature conservation, reservation satisfaction, system enforcement, and cognition of regulation. this suggests that park managers should make efforts to change the factors mentioned above. After the experience of the reservation system, they feel that there is a difference in natural resource management. But in the question of the natural contribution of institutional cognition, it is shown that there is no difference between years. Therefore, positive oral effects are also expected through the satisfaction of the visitors who experienced the reservation system. Second, after the Visitor-Reservation System experience, it was found that only the trail management had no difference; among the operational effect question. This suggests that a simple tour route management may not be a directly positive aspect of the Visitor-Reservation System, which visitors think. In other words, if the emphasis is placed on protecting the natural resources and passing on a good appearance to future generations without encroaching on the visit reservation system, the visitor's cognition of Visitor-Reservation System can get better. Third, it is found out that visitors no longer recognize the reservation system as a regulation. Rather, it shows a difference in the operational effectiveness of protecting natural resources through a reservation system. The park manager should actively implement a Visitor-Reservation System for specially protected areas or places that may damage natural resources to ensure sustainable visiting.

Fourth, among the behavioral intentions of the Visitor-Reservation System, the question of recommendation intention did not differ between 2014 and 2019. There was no significant increase in recommendation intention compared to satisfaction with visits, revisit, and overall satisfaction. in this way, it can be inferred that the cognition of Uiryeong-Gil Visitor-Reservation System has already been rooted in many visitors, and that visitors continue to visit, and revisit satisfied, even if not informed by oral effects.

In national parks, carrying capacity was assessed both from physical and social aspect (Masum et al. 2013). However, nowadays social carrying capacity is more important than physical carrying capacity. Social carrying capacity can be defined as the density that maximizes visitors' satisfaction, or the level of congestion, which a visitor would not visit alternative areas. In addition to social carrying capacity, psychological carrying capacity and perceptual carrying capacity refer to satisfaction via visitors' experience in and perceptions of the national parks (Ministry of Environment · Korea Environmental Industry and KEITI 2014).

Bukhansan National Park is one of the world's few national parks located in the urban areas that listed in the Guinness World Records Book as the "Most Visited National Park per Unit Area". In terms of social carrying capacity, the findings of this study shows that limiting the number of visitors in the area through managing pressures from visitors and use density could have a significant impact on higher level of satisfaction using Visitor-Reservation System on Uiryeong-Gil on Bukhansan National Park. Theoretical and practical implication of the study is as follows.

First, trails which have Visitor-Reservation system itself have potential value to visit. Most people usually want to visit hidden site and a place that anybody couldn't go easily. Visitors could want to visit because trails have to reserve only a few day and few visitors. Promoting the positive effect on the reservation system and giving the scarce value of the trail itself will bring positive results. Second, Visitor-Reservation System need to renewal in User-friendly graphics for easily using all over the age group. Thus, visitor satisfaction would be increasing yearly depending on

those kinds of factors. Third, in order to minimize friction with the local government through the Visitor-Reservation System, it is necessary to establish a win-win strategy that considers the activation of the local economy through the reservation system by implementing only the park area as a reservation system and conducting ongoing-meetings. Forth, in areas where proactive management happen, the management organizations need to establish a long-term monitoring systems to assess the impact of such activity on natural ecosystems, habitats, and biodiversity (Papayannis 2004).

In addition to the changes of visitors' perceptions, further research is necessary to examine the correlation between the actual ecological effect in accordance with the Visitor-Reservation System. However, this study is a result of only the Uiryeong-Gil, where a Visitor-Reservation System is in operation, so it is difficult to generalize. Therefore, in the future, it is necessary to expand the Visitor-Reservation System to all parks where it is operated and accumulate data through continuous investigation.

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