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Analysis on Willingness to Pay at the Ecotourism Destination, Cigamea Waterfall, Halimun-Salak National Reserve

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Abstract

Cigamea Waterfall is one of the ecotourism destinations situated in area of Salak Resort II of Halimun-Salak National Reserve (HSNR) Indonesia that can be partialy developed. The area consists of sub montanes forest and montane forest categorized as humid tropical forest. The uniqueness and the beauty of the flora, fauna, natural phenomena, and the natural condition become attraction for people to visit the area and willingness to pay for contribution fee. This fee is used as management funding to preserve the area. A demand for a commodity is trigered by willingness affordibility in buying that commodity (willingness to pay). The research analyzed willingness to pay by visitors to enjoy the beauty of Cigamea Waterfall. Logit method with descriptive quantitative approach was used in this study. Several stages in this study included: (1) analysing visitors' trend; (2) analysing respondents'logit regression towards willingness to pay (WTP); (3) analysing willingness to pay. During this research, this ecosystem may be the last home for Leopard which stated vulnerable (VU) by REDLIST of IUCN and may be the last home for other endangered (EN) species. Based on the analysis on the responses of 342 respondents concerning their willingness to pay for contribution, 202 of the (59,1%) were willing to pay while the rest 140 respondents (48,9%) refused to pay. The average value of willingness to pay obtained was 15.000 IDR (1 USD = 14.000 IDR per year 2016) paid to enjoy the beauty of Salak Resort II, HSNR. This value was higher than that of the ticket per ecotourism object charged by the management of the resort averaging 7.500 IDR. Based on respondents' willingness to pay, the average of the willingness to pay to enjoy the Cigamea waterfall ecotourism object was 14.000 IDR. The Willingness to pay to get into Cigamea Waterfall was lower than that for entering Salak Resort II, HSNR. Visitors willingness to visit Cigamea Waterfall ecoturism object due to the existence of forest and some natural phenomena, river as ecological corridors of the area, easy access through trekking path corridors in the forest margin (edges) as well as the potential of the flora and the fauna. The potential value of Cigamea Waterfall was 3,66 (out of 1 to 7 scale of Guideline of Ministry of Forestry), that of the flora was 2,48, while value of the fauna was 3,29. This also support claims toward a new paradigm of value that ecosystem is not only treated as supply depot of resources but also treated as oikos (home for us and other living organism).

Keywords: Cigamea Waterfall; Halimun-Salak National Reserve; humid tropical forest; landscape ecology; landscape management; willingness to pay.

JEL Classification: Q56; Z33.

Introduction

Tourism is one of the sectors in economy that is continuously developed by various countries as one of leading sectors (Gkoumas 2019, Mitchell 2001). Tourism development in an area can influence and trigger development in other sectors. It can also create employment, business opportunities as well as dealing with poverty (Lordkipanidze, Brezet and Backman 2005; Chok, Macbeth and Warren 2007). Ecotourism is a model in developing tourism that takes into account rules of natures by implementing integrated development and natural preservation programs combining efforts in natural resource conservation and development of sustainability of people's economy (Buchsbaum 2004).

One of the areas developed for ecotourism in Bogor Regency is Salak Resort II, Halimun-Salak National Reserve (HSNR) having 11 ecotourism objects (HSNR 2012; Kusumoarto, Gunawan and Nurazizah 2017). Tourism activities carried out in the area of a national park should have an ecotourism basis (Goodwin 1996, Scheyvens 1999). It is important as this industry operates with non-extractive and non-consumptive elements (Goodwin 1996; Sirakaya, Sasidharan and Sönmez 1999), basing it on environment conservation (Kiss 2004, Valentine 1993), but still taking into account economical benefits for the surrounding local people (Ross and Wall 1999, Wunder 2000).

Cigamea Waterfall (Curug Cigamea) is one of ecotourism objects located inside the area of Salak Resort II, Gunung Halimun Salak National Reserve (HSNR). The area of HSNR consist of sub-montane forest classified as humid tropical forest. This waterfall has potential of natural phenomena, open green space and good flora and fauna. Based on the research conducted by Kusumoanto *et al*. (2017), this waterfall has a very potential value to be developed into an ecotourism object. One of the factors having a potential value is the attractiveness of the object. The difference in attractiveness between one location and another is a factor that encourages someone or group of people to visit the place. Stimulation or attraction that is later developed for the purpose of tourism is called tourism attraction (Darsoprayitno 2002). The natural beauty having attractive sceneries and other natural attractions have positive impacts on tourist interest (Yan, Barkmann and Marggraf 2007).

Cigamea Waterfall is managed by the office of HSNR. There has not been any special budget for the management of ecotourism activities. This ecotourism object is very potential to be developed and it is still in line with the main objective of the establishment of a conservation area for protecting and conserving natural resources. Ecotourism activities in Cigamea Waterfall can create revenue for funding as well as for supporting the management of ecotourism activities there and providing budget for the management of the area of salak Resort II in order to be well maintaned and preserved.

In managing the area of Salak Resort II of HSNR, there should be a plan for an ecotourism activity that includes charging some retribution to the visitors. The money obtained from the tickets should be allocated for preservation of the area and not mainly for comercial purpose. A demand for a commodity is triggered by willingness and affordabitiltyin buying it (willingness to pay). The value of Willingness to pay (WTP) reflects benefits of a policy to be proposed such as environmental improvement (Iranah *et al.* 2018).

WTP means a maximum amount of money that can be paid by someone without thinking about the option of paying for a charge of something or refusing that charge and spend their income on other things (Iranah *et al.* 2018). In the case of Cigamea Waterfall, WTP is related to the utility value expected by visitors for a charge. Hence, it is necessary to know the WTP value of the area of salak resort II in general and in Cigamea Waterfall in particular.

The research analyzed the WTP among visitors in order to enjoy the two sites mentioned above.

1. Literature Review

A prominent ecologist Odum (Biagio *et al.* 2019) that imply an appeal our value toward ecosystem. That ecosystem should be value not only as supply depot of resources, but also as oikos (home) for us that supply ecosystem services, like supply of oxygen, habitat of fauna and flora, education, recreation or tourism. Government of Indonesia respons this apeal as eco awareness by establishing 51 units of the national park, including Halimun Salak mountain national park [HSNP]. To maintain the sustainability of the national park, voluntary association of IPLBI (Ikatan Peneliti Lingkungan Binaan Indonesia or Association of Indonesian Built Environments Researchers) conducted a serial perceptive researchs in sector II of The HSNP: (1) concerning visitor trend analysis (Kusumoarto and Ramadhan 2016), (2) concerning landscape potential analysis for ecotourism, (3) landscape potency (Kusumoarto, Gunawan and Nurazizah 2017). Those research results showed that among 8 tourism objects within Resort II of the HSNP, Cigamea Waterfall was known as very

potential one. However, considering limiting factor of the site regarding landform, carrying capacity, and budget for maintenance, confirmation research that represents real demand curve like WTP (Iranah *et al.* 2018, Vallecillo *et al.* 2019) might be relevant to prioritize tourism object establishment.

2. Methodology

The research was conducted in the area of Cigamea Waterfall of HSNR in January 2016, assisted by research assistant of HSNR. Logit method having a descriptive and quantitative aproach was used in this research. Some stages in the research were: 1) analyzing visitor trend, 2) analyzing logit regression of respondents towards willingness to pay (WTP), 3) analyzing the WTP.

The materials used in this study are questionnaires, aerial photos in 2016, basic maps of the Indonesian landscape, Bakorsurtanal scale of 1: 25.000; 2017 UAV aerial photo interpretation, land use maps from the Spatial Planning and Land Agency, Bogor Regency in 2013. Data collection methods consist of: literature studies, field observation, interviews, filling out questionnaires. Primary data is obtained directly in the field, in the form of measurements, observations, photographs, interviews, and filling out questionnaires. Secondary data is obtained through literature studies (data from previous research results as well as other scientific documents relevant to research material).

Analysis potentials of ecotourism objects were analyzed using the modified ADO-ODWTA (Evaluation on the analysis of the operating area of objects and atractiveness of ecotourism) (Directorate General for Forest and Nature Conservation [Ditjen PHKA] 2003). The data were then processed and analyzed based on predetermined criteria to obtain guidelines for ecotourism analysis. The total score of those criteria (Eq.1) was calculated using the following formula.

$$S = N \times B \quad (1)$$

Notes: S = Score/ Value, N = The total number of elements in the criteria, B = Score Weighting

The visitor trend analysis was done to identify characteristics of visitors having interest in ecotourism. The components identified were the gender, place of origin, education and age. There were important in the analysis on further proper planning on the ecotourism area. The data were derived form questioners radomly distributed to visitors in each of ecotourism objects.

Logit analysis was used to decide on the possibility of visitor's willingness or unwillingness. 342 respondents was asked for their opinion on their willingness to pay for retribution. The response variable used was possibility for effort in maintaining in the maintenance of facilities and preservation of Salak Resort II, HSNR. Score 1(one) was atributed to respondent who had willingness to pay. While those did not want to pay was given a retribution score of 0 (zero). Six variables used related to the responses were place of living, age, gender, level of education, level of income, marital status, frequency of visit, purpose, visiting day, visiting time, and duration of their visit.

WTP analysis was based on the affordability in paying for a charge (Iranah *et al.* 2018, Vallecillo *et al*. 2019, Fauzi 2014). The respondent was asked a question concrning paying Rp. X,- both for improvement of ecosystem (ex-post damage) and evaluation on the service of undamage environment (ex-ante). This methode is called Dischotomous Choices (DC) as there are only two optionsin answering this question; "yes" or "No" or "agree or disagree". The rupiah value offered was called a bid value.

The analysis was done based on preference theory to measure compensating surplus and equivalent surplus obtained through WTP elicitation (Iranah *et al.* 2018, Fauzi 2014). Indirect utility function v (p,q,u) is obtained if someone's utility is assumed as a function as consumption comodity x and public property (SDAL) q atau U (x,q) and budget constraint M = px where p is the prive vector. Meanwhile budget minimization (expenditure) was e(p,q,u). The connection of indirect utility function can be made through evaluation of expenditure function at the early stage before there is a change in policies or M = e(p,q,v(p,q,M). Someone's WTP (Eq.2) towards the kind of change was reflected on differences in expenditure or

$$WTP = e(p,q_0,u) - e(p,q_1,u) \quad (2)$$

where WTP was the affordability in paying for changes. This reflects that changes in SDAL (Nature and Environmental Resources) after the establishment of policies could be notated with q_1 and the baseline condition as q_0 with an assumption of $q_1 > q_0$ (improvement in SDAL services). By subsituting the indirect utility function with the above, Compensating Surplus (CS) could be obtained reflected on WTP (Eq.3):

$$WTP = M - e(p,q_1,v(p,q_0,M)) \quad (3)$$

Or it could be rewritten as:

$$v(p,q_0,M) = v(p,q_1,M - WTP) \quad (4)$$

A visitor's WTP was not observed directly in this method, but it was concluded from their response towards proposed offers in changes. A visitor's WTP could be bigger than value offered, and in contrast, if someone accepted the proposed offer, the unobservable WTP was called a latent variable or WTP*, and the value of the offer is called "bid" (B), and that correlation between WTP and the bid coulbe expressedin the following equation:

While WTP was the observable value of affordability in payment (WTP = 1 is a "Yes" response and WTP = 0 is a "No" response). WTP* was a latent variable and Bi was the bid value from individuals to i. WTP* could be formulated into various forms, but the most general one was of the linear as shown below:

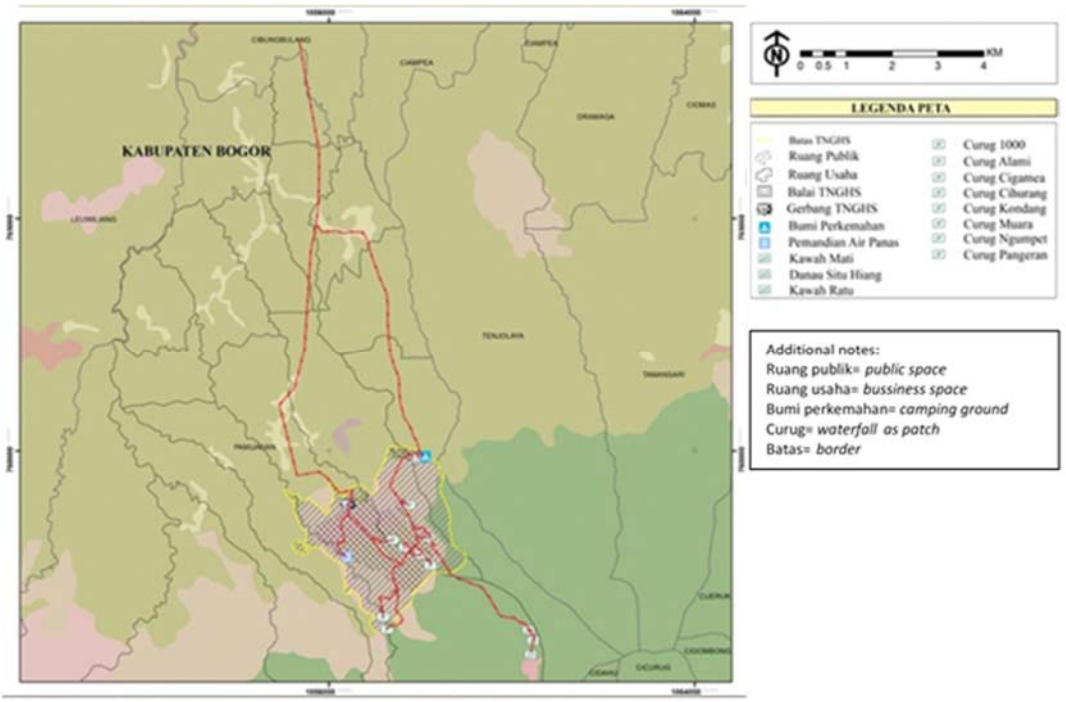
$$WTP^* = x_i \beta + u_i \quad (5)$$

where x_i was vector at describing variable, β was a parameter vector and u_i was galat (error term). Fauzi (2014), stated that in a logit model, distribution at error form (u_i) follows logistic distribution, so the chance to answer "Yes" was determined by the following function.

3. Results and Discussion

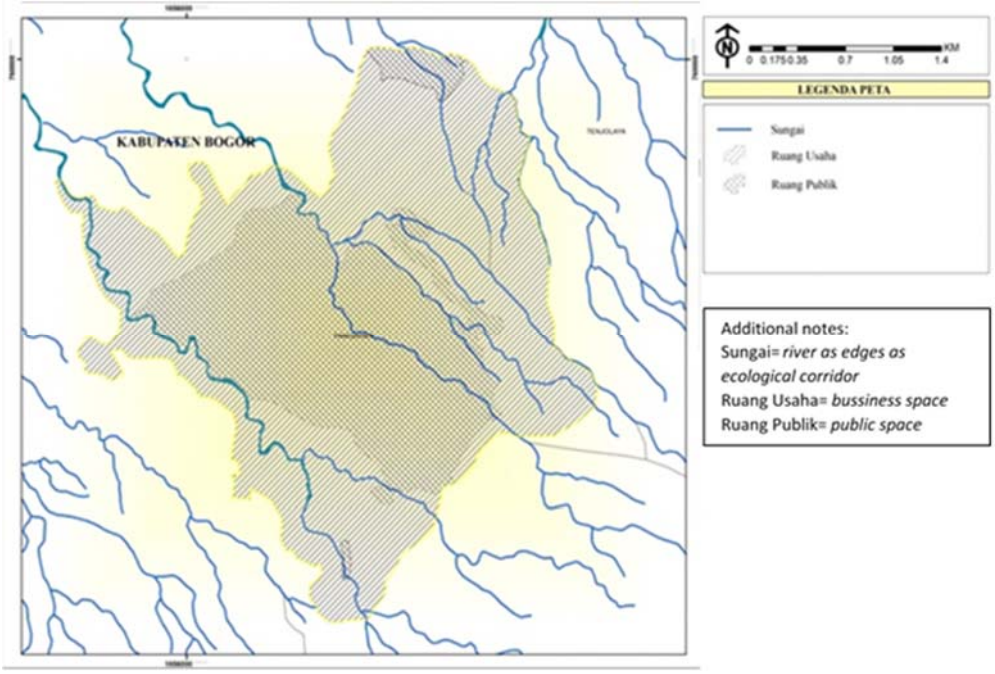
General condition of Cigamea Waterfall, the area of Salak Resort II, HSNR. Cigamea Waterfall is situated at HSNR, forming one of patches in an ecological matrix of submontane forest catagorized as humid tropical forest (Figure 1). Visitors were interested to visit Cigamea Waterfall due to the two locations of the waterfall that were easily accesible and a resting area for the visitors to appreciate and admire the beauty of the ecological waterfall. The natural condition around the waterfalls made them more attractive. This was identified by the number of visits to the places ranked at the second position (Kusumoarto, Gunawan and Nurazizah 2017). The downfalling waterfalls formed a river flow corridor making Cigamea Waterfall one of the favourite places to visit (Figure 2). Its altitude at 825-900 meters above sea level with relativity flat slope to very steep become an interesting and challenging tourism activity.

Figure 1. Matrix of submontane forest of HSNR and the patch of ecotourism objects in Salak Resort II at HSNR



Source: (Kusumoarto *et al*. 2017)

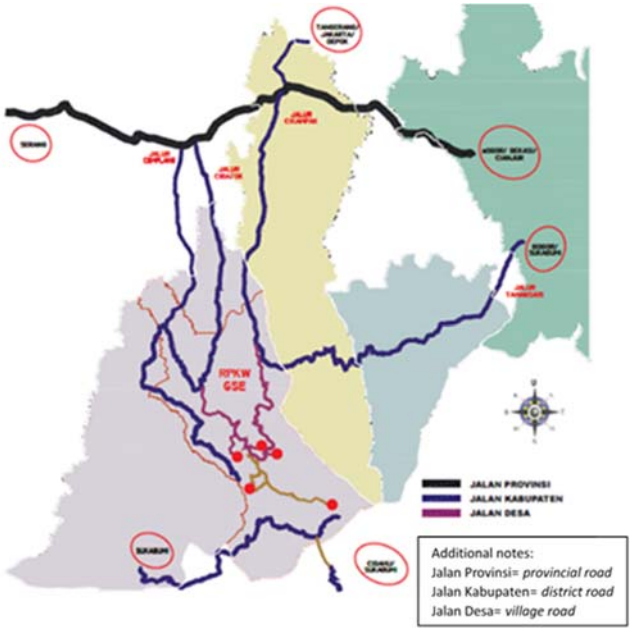
Figure 2. The river flow corridor passing through waterfalls at Salak Resort II of HSNR



Source: Kusumoarto *et al*. 2017

Cigamea Waterfall is situated in Cigamea river flowing through the corridor of Sub Water Side Cianten with big water shed during wet season and small ones during dry season due to the high intensity of land use in the upstream of Cigamea and less reforestration there. To reach the location, visitors should go through the main gate of Salak Resort II area of HSNR. Easy acces connected by a road corridor starting from the road facility of the province, regency and village provide ease to visitors. The road corridor to get to the location is shown in Figure 3. The village road functions as an ecological corridor as it is situated inside the area of HSNR.

Figure 3. The Corridor toward the direction of Salak Resort II area of HSNR



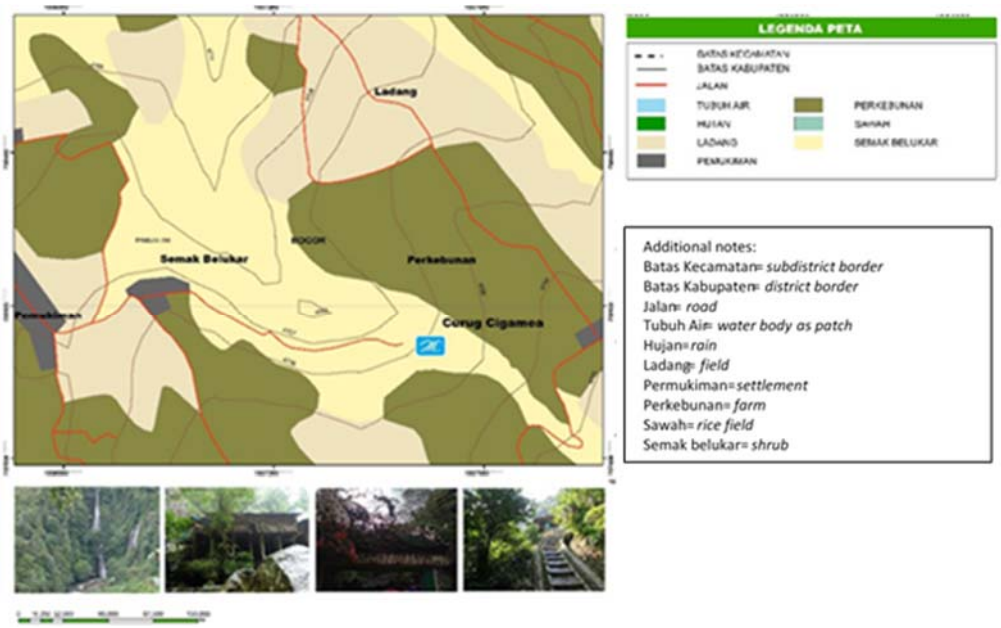
Source: Kusumoarto *et al*. 2017

Landscape Setting. The entrance functioning as an ecological corridor to Curug Cigmea is about 800 meters long from the main gate with stones forming a stairway just in accordance with the existing condition of land slope with the road width of 0,5-1meter. Visitors usually spend two hours in that area except those who

camp there for at least two days. Figure 4 shows the visual condition of the ecological matrix, patch, and corridor (Forman and Godron 1986) in Cigamea Waterfall.

Some visitors wanted to revisit the existing ecotourism objects in the area of Salak Resort II, HSNR. In addition to Cigamea Waterfall, there are also potentials of flora and fauna. The potential of natural phenomena in Cigamea Waterfall was scored 3,66 (out of 1 to 7 scale of Ministry of Forestry Guideline) based on the assesment on uniqueness, beauty, scarcity, sensitivity, seasonality, accessability, and social function. The form in that area was categorized as good enough based on the assesment of uniqueness, beauty, scarcity, sensitivity, seasonality, accessibility and social function. The potential score was 2,48 (out of the 1 to 7 scale). The condition of natural phenomena and vegatation in the surrounding area can be seen in Figure 5.

Figure 4. Matrix, patch, and corridor in Cigamea Waterfall, the area of Salak Resort II, of HSNR



Source: Kusumoarto *et al*. 2017

Figure 5. Natural phenomena, and vegetation in Cigamea Waterfall

Source: Authors

The forest in the area of HSNR consist of submontane forest and mongtane forest categorized into humid tropical forest. Some types of trees such as "Tusam" *(Pinus merkusii, coniferi)* and "Rasamala" (*Altinga excelsa)* are grown in the lower part of the forest area. There are also Puspa tree (*Schima wallichii), "*Saninten" *(Castanopsis sp.), "*Pasang" *(Lithocarpus* sp), and various types of "Huru" (Lauraceae) picturing typical submontane forest in Java. In some locations in this forest, some rare species of trees such as *Rafflesia rochussenii* can also be found growing limitedly up to Gede mountain and Pangrango mountain ridge. At the boundary areas of the forest or nearby the river, some types of vegetation such as red kalliandra (*Calliandra calothyrsus*), "dadap cangkring" (*Erythrina variegata*), "kayu afrika" (*Maesopsis eminii*), "jeunjing" (*Paraserianthes falcataria*) and various kinds of bamboos also were found.

Using direct count method, various types of fauna such as reptiles, birds, and mammals are also found in the slope of Salak mountain. The research by Nasir (2003) found 11 species of frogs and toads in the research area: *Bufo asper*, *B. melanostictus*, *Leptobrachium hasseltii*, *Fejervarya limnocharis*, *Huia masonii*, *Limnonectes*

kuhlii, *L. macrodon*, *L. microdiscus*, *Rana chalconota*, *R. erythraea* dan *R. hosii* and also Horned Frog (*Megophrys montana*) and Flying Frog (*Rhacophorus reinwardtii*). This result did not include tree frogs, and those of the mountain frogs that could possibly found. Various reptiles especially lizards snakes were also found here. There were also Chameleon (*Bronchocela jubata)* and *B. cristatella*, garden chameleon *Mabuya multifasciata* and freshwater alligator *Varanus salvator*, kinds of Tangkai Snake (*Calamaria* sp.), Siput Snake (*Pareas carinatus*) as well as Sanca Kembang Snake (*Python reticulatus*).

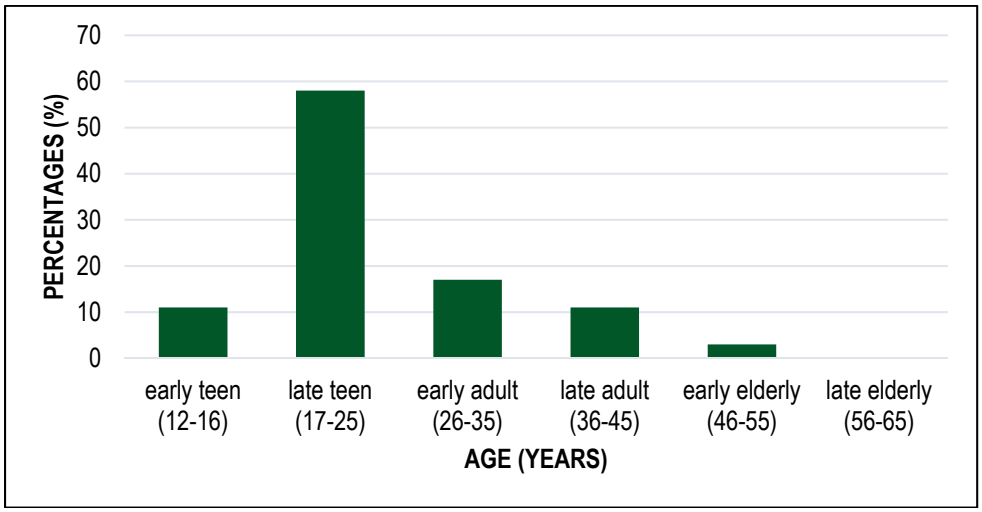
Salak mountain has been known to be rich in bird species as it was recorded by Vorderman (1885) who found 232 birds species in this mountain. Some important species from this mountain are "Elang Jawa" (*Nisaetus bartesi*), and some other types of "Elang", "Ayam Hutan Merah (*Gallus gallus*), *Cuculus micropterus*, *Phaenicophaeus javanicus* dan *P. curvirostris*, *Sasia abnormis*, *Dicrurus remifer*, *Cissa thalassina*, *Crypsirina temia*, Burung Kuda (*Garrulax rufifrons)*, *Hypothymis azurea*, *Aethopyga eximia* and *A. mystacalis*, and also *Lophozosterops javanica*. Elang Jawa (Javanese Hawk) is an endangered species (EN) based on REDLIST of IUCN and it is a top predator.

There has not been much recorded about the detail of Gunung Salak's mammals and the same case happens to reptiles and frogs. However, some important species such as "Macan Tutul" (*Panthera pardus*) which has been vulnerable (VU) based on REDLIST of IUCN, "Owa Jawa" (*Hylobates moloch*), Primate presbytis (*Presbytis comata*) and "Trenggiling" (*Manis javanica*). HSNR is also breeding area of "Kukang Jawa" (*Nycticebus javanicus*). These mammals are endangered (EN) based on REDLIST of IUCN, were also found there.

Cigamea Waterfall scored the highest (3.29 out of 1 to 7 scale) because of the potential variety of fauna in this area. This was based on uniqueness, beauty, scarcity, sensitivity, seasonality, accesability, and social function. The uniqueness was identified from the changes in behaviour among the Long Tailed Mongkey (*Macaca fascicularis*). Monkeys in Cigamea Waterfall are not affraid of visitors and they do not agressively run offer the visitors or take away things from visitors. More than 100 monkeys could be found on the way from the parking area to the destination of tourism objects. The behaviour of the monkeys increase the value of uniqueness in Cigamea Waterfall. This behaviour is not seasonal. There are always monkeys around when the visitors come to the area.

Visitors Profile. Various types of visitors based on ages and gender were interested in visiting the place ranging from males and females of 12-14 years old to those aged 56-65. Based on gender, there was no significant difference in the number between male and female visitors accounting for both 50% each. However, in terms of ages, visitors to the area were mostly those of late teens dominated the visit being up to 58.36 % (Figure 6)

Figure 6. The distribution of visitors ages



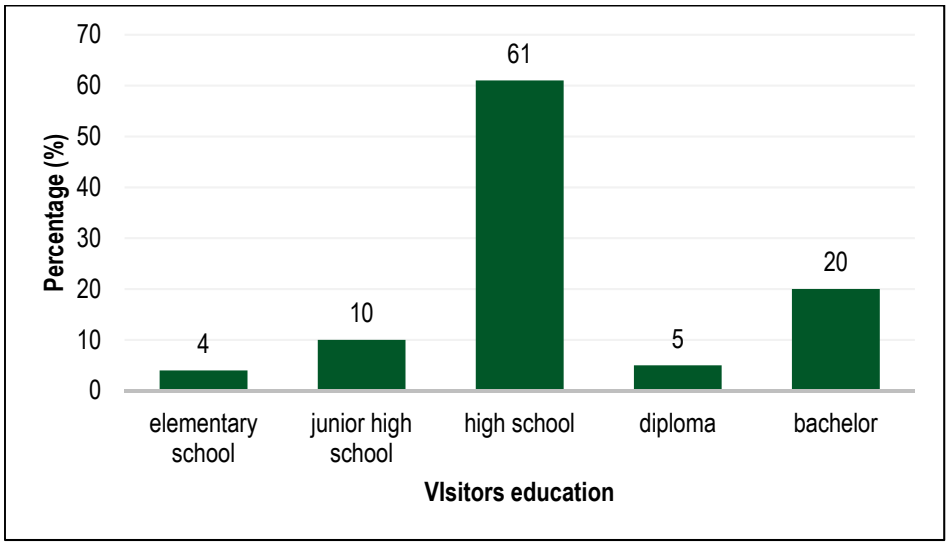
Source: Authors

Visitors to the area came from Bogor and Bogor regency, hinterland of Jakarta (37%), and those from Jakarta, The Capital of Indonesia (31%). Visitors from other places in West Java such as Bekasi, Karawang, Ciamis, and Bandung also contributed to the number of visitors to the area despite being in a very small percentage (7%). There were more visitors from Central and East Java than those from other cities in West Java

(20%). They came from Bali, Sumatra, and Kalimantan (5%). The quantity and distribution of places of origin of the visitors were in a normal category based on the distance to the area. The farther the distance, the fewer the visitors to the area. This result shows that the ecotourism object considered important to visitors as a form of environmental service of HSNR, and landscape service as well.

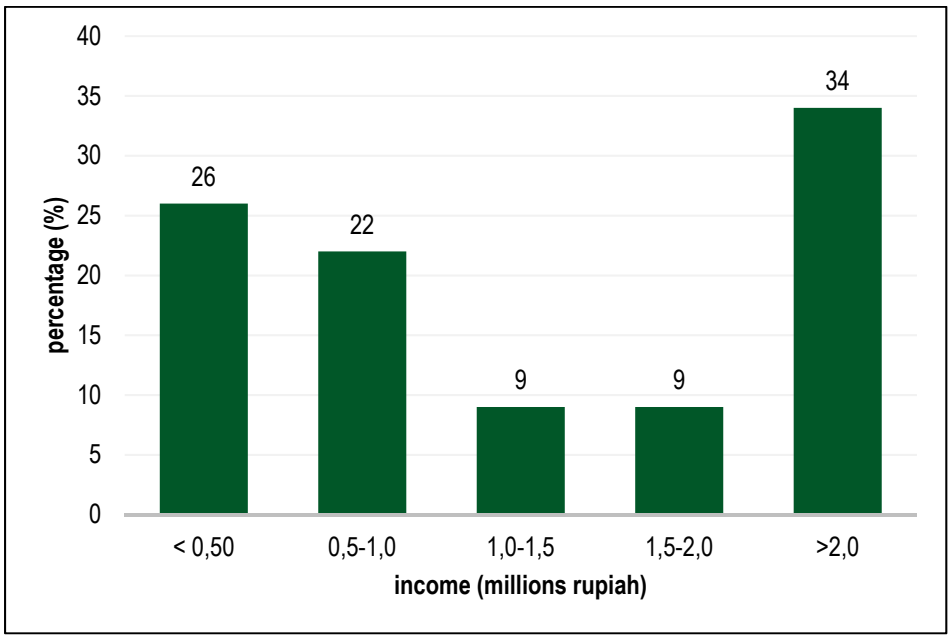
The data obtained indicated that more than 80% of the visitors had a compulsary education level required by the government (Figure 7). This had implication on the visitors attitude, interest in tourism, activities as well as visitors perception towards the appropriate tourism activities held in the area. It helped in realizing the area of Salak Resort II of HSNR into an ecotourism object in which one principle to meet was that the tourism activities should maintain the environment and have educational values. The moral norm was a very important element and was related to WTP.

Figure 7. Educational level of visitors



Visitors having an income of Rp. 2.000.000,- were dominant visitors to the area (34%) and also those earning below Rp 500.000,- (26%) (Figure 8). This was an acceptable conditions as those having permanent job accounted only for 36% meaning they earned more than Rp 200.000,-. Those earning below Rp 500.000,- were identified as school/university students.

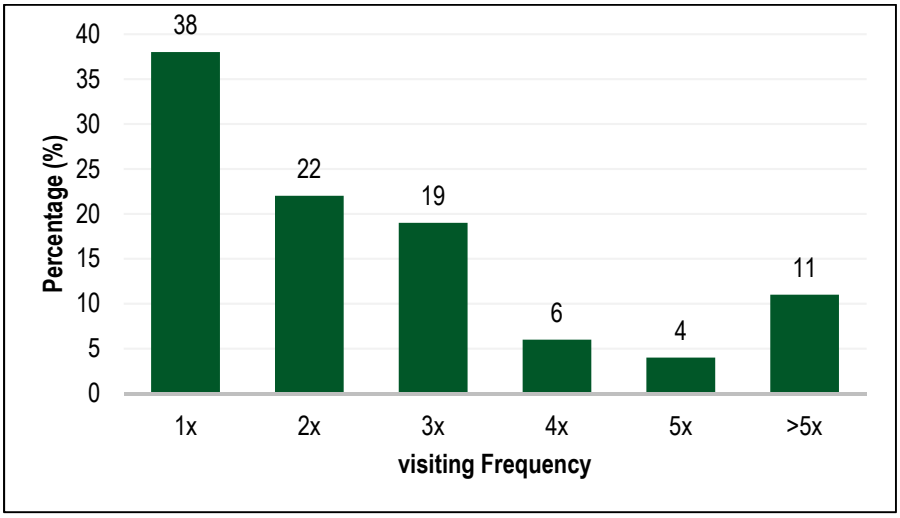
Figure 8. Visitors' income range



The kind of transport used by visitors to the area was that of private cars or vehicles (75%) and that of rent was (21%). This was related to the condition of accessability to the area from their places of origin. These moda reflects good accessibility to tourism object and accessibility is one of important factors to develop ecotourism object.

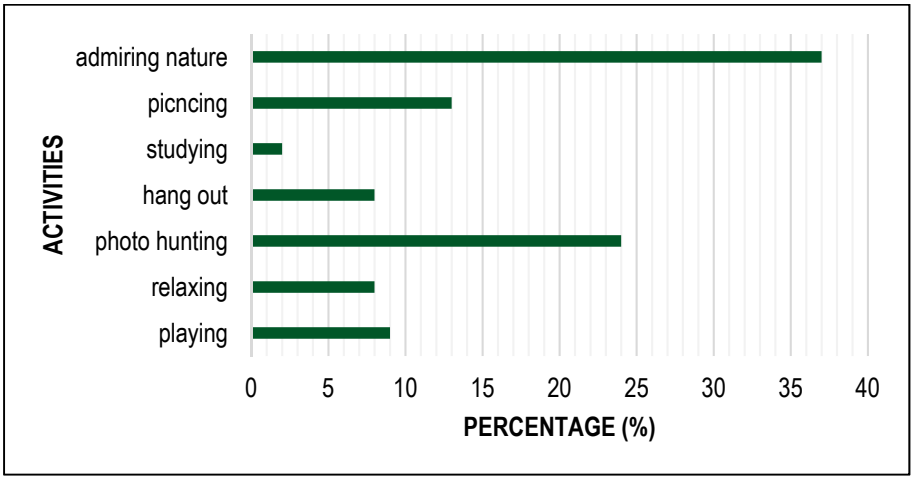
Visitors to the area were considered as loyal ones (62%) as they were repeater guest. 40% visited the area the third times or even more (Figure 9). This indicates that the area had attraction that makes visitors to revisit the area to enjoy the beauty of the nature, facilities, as well as the service given. It reflects contribution to increase turn over rate of the tourism object.

Figure 9. Frequency of the visit



Favourite Tourism Activities. Visitors motivation is related to the choice of activities they do. This 37% of the visitors came to enjoy and admire the beauty of nature in the area. Another favourite activity was phototaking (24%) (Figure 10). Other activities included having a picnic, playing around, resting, and social interaction. The purpose of identifying types of activities attracting visitors was to formulate types of facilities needed and develop activities in this area. They should meet the need for visitors to enjoy the natural beauty and phototaking.

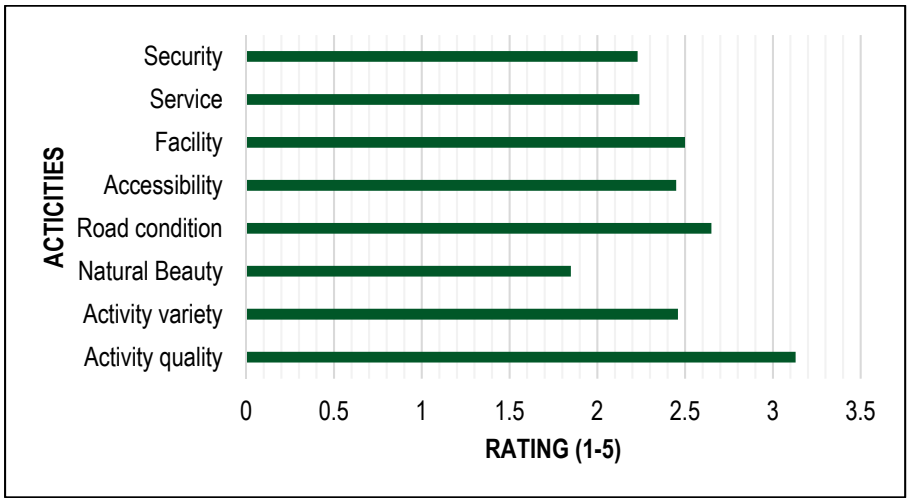
Figure 10. Activities done by visitors



Based on the pattern at the visits, 42% visited the place on Saturday and Sunday while those coming during long holidays accounted for 44%. Those visiting the place an working days (Monday-Friday) numbered 13%. Based on those situations, the pattern of visiting hours could be identified, most of them (60%) came in the morning in order to enjoy and admire the place longer and visit more objects around the area. The visitors coming inthe afternoon (32%) were mostly those from outside Bogor as it would take longer time for them to reach the area. Only 9% came in late afternoon. Most visitors stayed in the area for more thn 3 hours (61%),

forming patterns of 3-6 hours (34%), 6-12 hours (12%) and > 12 hours (15%). This situation was related to the reason of having this area as their main destination, and they did not have rush to other objects inthe area. Those who spent their time in the area between 0-3 hours accounted for only 39%. Measures of satisfaction in visiting the area consisted of those related to the quality of the activities, the road condition, easy acces, natural beauty, safety of the area, complete facilities, and the service by the workers. Satisfaction graph (out of 1 to 5 likert scale) can be seen in Figure 11.

Figure 11. Satisfaction factors of visitors



Despite the low value of the satisfaction, visitors to the area, who were mostly local visitors intended to revisit the place reaching the number of 91%. Only 9% of visitors decided not to come back to the area.

Analysis on Logit Repressionatthe respondents'responses toward WTP. The respondents (342) were asked for their opinion on their willingness to pay for retribution, 202 visitors were willing to pay (59,1%) while the other 140 visitors (48,9%) refused to pay. Based on the the analysis logit repression, the testing started when all the slopes of the model were 0 result in/produced a G statistics of 27.965 and P value of 0.003 which means that there was at least one slope model that had a significant effect on the possibility of respondents' willingness or unwillingness to to pay more for the ticket in the effort of maintaining and preserving the area of Salak Result II at the level of a = 0.05 (Table 1).

Table 1. The logit result of respondents' willingness to pay in the effort of maintaning and preserving the area of Salak Resort II of HSNR

Parameter	Coefficient	P	*Odds Ratio*	Notes
Constant	(7,273)			
X1. Place of origin	0,614	0,016	1,847	Significant
X2. Age	0,376	0,191	1,456	Not significant
X3. Sex	0,337	0,152	1,400	Not significant
X4. Education	0,964	0,051	2,622	Significant
X5. Income	0,487	0,075	1,627	Significant
X6. Status	(0,101)	0,743	0,904	Not significant
X7. Frequency	0,894	0,038	2,444	Significant
X8. Main Object	0,335	0,374	1,399	Not significant
X9. Day of Visit	0,265	0,454	1,304	Not significant
X10. Hour of Visit	0,526	0,183	1,692	Not significant
X11. Duration of visit	0,235	0,325	1,264	Not significant
Test that all slope zero : G = 27,965 P-value = 0,003				
Goodness-of-fit Test				
Methods	Chi-square	DF	P	Notes
Hosmer-Lemeshow	9,467	8	0,304	(Good Model)

Source: authors;
Notes: Significant different at 90%

Meanwhile, significant variables affecting the possibility of visitors' willingness or unwillingness in individually raging paying for retribution were their place of origin/living place and frequency of their visit. Based on the testing on appropriateness of Hosmer's and Lemeshow's model, the p value (sig 0,304) was bigger than a=0,05 and it could then be concluded that it was a good model. The logit results related to the possibility of respondents' willingness or unwillingness to pay for sustainability and preservation of an ecotourism area was significantly affected by sustainable intelligence (Fernández and Sánchez 2016).

Based on the result, a logit model suitable for this analysis was derivied:

$$Li = -7.273 + 0.614X1i + 0.376X2i + 0.337X3i + 0.964X4i + 0.487X5i - 0.101X6i + 0.894X7i + 0.335X8i + 0.265X9i + 0.526X10i + 0.235X11i + \varepsilon i \quad (6)$$

In that model equation (6), the charging elements or factors having significant effects on visitors' willingness to pay were:

1.Places of origin/ Residing place/ residential area

P value of the changing factor of the distance from the residing area to the tourism area was 0.016, which significantly affected the choise of willingness to pay having 90% of level of trust. The value of odd ratio of this changing factor was 1.847 meaning the farther the respondents live, the bigger the opportunity of the respondents to pay (1.847 times bigger).

2.Education

The P value as the changing factor of educational level was 0.051 implying that it significantly affected the willingness to pay with a 90% level of trust. The value of odd ratio of this changing factor was 2.622. This means that the higher the education level of the respondents the bigger their willingness to pay (2.622 times bigger).

3.Income

The 0.051 P value of the changing factor of income represented a significant effect on the willingness to pay with 90%level of trust. The value of odd ratio was 1.627. Higher income of respondents could make the willingness to pay by respondent 2.622 times bigger.

4.Frequency of Respondents' visits

The P value of the changing factord of the frequency of the vsit was 0.038 meaning that it significantly affected the visitors' willingness to pay with 90% level of trust. The value odds ratio was 2.444. The more the visits, the biger the opportunity for willingness to pay by respondents (2.444 times bigger). In this research, the score/value of the visiting frequency was different from a theory keeps stating that the frequency of the visits negatively affects the willingness to pay.

The model derived in this research shows the 7 changing factors that had no significant effect: age, gender, marital status, main object, the day of the visit, the time of the visit, and the duration of the visit.The logit analysis reflected the value of actual condition and the potential of the number of the respondents who were willing to pay or unwillling to pay. The actual and potential condition of the frequency can be seen in Table 2, and the correction of the potential and actual value is shown in Table 3. The potential conditionis shown as expectation value and the actual condition of the respondents is represented by observation value.

Table 2 shows the the difference between the actual condition and the potential condition of the number of respondents who were willing and unwilling to pay. The respondents were put into 10 groups. There was a difference between the actual and the potential in the groups either in those willing or those unwilling to pay for restribution. The difference between the value of actual and potential conditions could result from some respondents who were potentially willing to pay for the ticket. But through that the value of the amount paid did not match the facilities they got, and thus they decided not to pay for the ticket.

Table 2. Frequency of observation and expectation in options of respondents' willingness to pay for the ticket

	Group										Total
	1	2	3	4	5	6	7	8	9	10	
Value 1											
Obs	12	14	21	23	17	17	25	22	30	21	202
Exp	12,18	15,07	17,77	19,03	20,10	21,60	24,66	23,52	26,31	21,77	202
Value 0											
Obs	24	20	14	12	17	18	13	12	5	5	140
Exp	23,82	18,93	17,23	15,97	13,90	13,40	13,34	10,48	8,69	4,23	240
Total	26	34	35	35	34	35	38	34	35	26	342

Source: authors

The value of observation and expectation for the opportunity shows repondents were wiling to pay for retribution. Based on the data, there was a difference in the observation value and that of the expectation, but they still show that the model produced was satisfactory/good (Table 3). Of the total of 202 respondents willing to pay, there were still 35 people who did not pay as much as they were willing to as ther was not yet any decision on the price of the ticket that they were prepared to pay. Of the 140 respondents who were not willing to pay, 90 people had to pay due to the existing pricing rule of the ticket.

Table 3. Connection of the value of observation and chance of expectation for respondents to willingly or unwillingly pay for the ticket

		Expectation			Correction (%)
		Willing	Unwilling	Total	
Observation	Willing	167	35	202	82,7
	Unwilling	90	50	140	35,7
	Total	257	85	342	
Corrected total					100

Source: author's analysis

Table 4. Distribution of the respondents' WTP value of Salak Resort II of HSNR

No.	WTP (Rp)	Responden number	Presentase (%)	WTP x Responden
	A	b	C	Axb
1	8.000	31	15,35	248.000
2	10.000	100	49,50	1.080.000
3	15.000	22	10,89	330.000
4	20.000	10	4,95	380.000
5	25.000	21	10,40	525.000
6	30.000	8	3,96	240.000
7	50.000	10	4,95	500.000
	Total	202	100,00	3.043.000

Source: author's analysis

Table 5. Visitors' total WTP

WTP	Respondent Number	Population	Total WTP
8.000	31	3.826	30.608.000,00
10.000	100	12.341	123.410.000,00
15.000	22	2.715	40.725.000,00
20.000	10	1.234	24.680.000,00
25.000	21	2.592	64.800.000,00
30.000	8	987	29.610.000,00
50.000	10	1.234	61.700.000,00
Total	202	24.929	374.533.000,00

Table 6. Distribution of respondents' WTP value

No	WTP (Rp)	Respondent Number	Percentage	WTP x Responden
1	8.000	1	3,33	8.000
2	10.000	23	76,67	230.000
3	15.000	1	3,33	15.000
4	20.000	1	3,33	20.000
5	25.000	2	6,67	50.000
6	50.000	2	6,67	100.000
	Total	30	100,00	423.000
	Average			14.100

Willingness to Pay (WTP) Analysis. In this research the technique used in obtaining the bid value was done by using closed question method with the WTP value ranging from the lowest to the the highest, from Rp 8.000,- to Rp 50.000,-. This closed question approach made possible the trend for the affordability of the ticket by visitors. Predicted average of WTP value of the respondents was derived based on the ratio of the total WTP value given by the repondents with the total number of respondents milling to pay (Table 4). The distribution of

the respondents' average WTP value was Rp 15.064,36 (1 USD = 14,000 IDR per year 2016). This was a higher value than the ticket price per tourism object changed by the management of Salak Resort II, which was averagely as much as Rp 7.500,00.

The calculation result of the total WTP can be seen in Table 5. Based on the result of calculation, the total WTP value of the respondents for one year was Rp 375.533.000,00. This value indicated a predicted WTP average from the total population of year 2016. Cigamea Waterfall respondents (71.43%) were willing to pay more than the ticked price proposed. The WTP average was 14.100 IDR (1 USD = 14.100 IDR/ year 2016) (Table 6).

Conclusion

The area of Salak Resort II attracts various type of visitors of differnt ages and gender. Cigamea Waterfall is one of ecotourism objects that has a very good visiting level. Based on the result of the analysis on the social trend of the visitors, the tourism object is recommended to be further developed. It also has potentials of natural phenomena, flora and fauna that encourage people to visit and see the object and be willing to pay for retribution fee.

Based on the analysis, the average WTP value was Rp 15.064,34 in order enjoy the area of Salak Resort II. This value was higher than the ticket price per tourism object change by the management of the area averaging Rp 7.500,00. The respondent proposed the average of Rp 14.100,00 charge to enjoy the tourism object of Cigamea Waterfall.

People are interested in visiting the place as there are two locations of waterfalls that have easy access located at submountain forest and a resting area for visitors to admire the beauty of the waterfall and the river corridor around the natural forest. The easy access connected by the road corridor starting from that of the province regency, and up to the village provides easy access for the visitors. The vilage road ecologically functions as an ecological corridor.

In addition to the waterfall, there are also fauna and flora. The flora is good. The fauna diversity is also found in the area of Salak Resort II of THGHS, which contribute to the highest value for Cigamea Waterfall. This research confirms the previous research in the same resort at different object of patch. This also support claims toward a new paradigm of value that ecosystem is not only treated as supply depot of resources but also treated as oikos (home for us and other living organism) by giving ecosystem services as ecotourism object. Cigamea Waterfall has exceptional characteristic as landscape architectural design due to unified character and element. This WTP research confirms development priority of Cigamea Waterfall among 8 objects due to WTP ability to represent real demand curve. Consequently, we must protect and conserve natural ecosystem as natural as possible in developing the ecotourism object.

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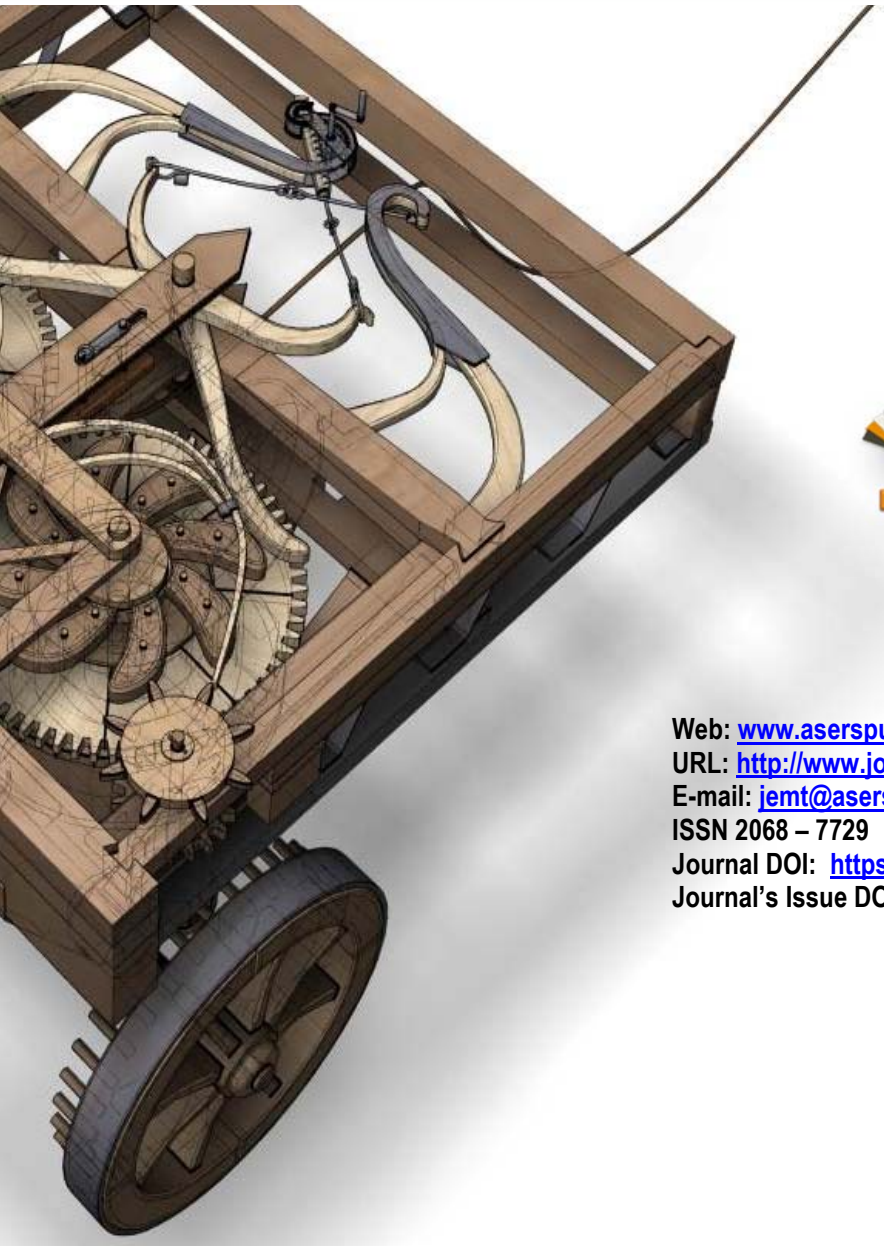

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