

Original Article

Valuation of Recreational Value of Singa Hot Spring of Myagdi, Nepal

Sandeep Basukala ^{1*}

1. Yeungnam University, Gyeongsan, South Korea.

* Correspondence: mus.sandee@gmail.com

Abstract: Nepal's abundant natural resources, including hot springs, are essential for both consumption and non-consumptive purposes. However, the use of these resources is not sustainable and deprives them of their value and potential benefits. The tourism industry contributes 2.2% of Nepal's GDP, with the majority of visitors going for entertainment, hiking, climbing, pilgrimages, and other activities. Hot spring tourism is growing in Nepal, with numerous hot water springs estimated at 32. This study identified the recreational value of Singa hot springs and determine the highest visitor fee (WTP) for entrance fee. By analyzing travel expenses and visitor willingness to pay for admission charges, the results could be useful for developing policies about hot spring management, socioeconomic growth, entrance fees, and building a healthy environment between residents and visitors. Distribution factors such as age, sex, formal education, income, and work have the biggest bearing on leisure desires and demand for outdoor recreation. The Travel Cost Method (TCM) is used to evaluate a person's preference for using indirect valuation of non-market commodities like thermal hot spring baths. This study investigated the relationship between visits to thermal hot spring baths and various factors such as travel cost, age, sex, education, work status, household size, journey days, travel cost, visitors from, and quality perception. This study focused on the Singa Hot Spring (SHS) in Myagdi District, Nepal, with the majority of visitors coming from Beni, Pokhara, Baglung, and Parbat. The total cost of SHS travel includes travel cost, lodging charge, access fee, miscellaneous expenses, and time cost. The results revealed that most visitors visit SHS for one day, living on homestays and lodges after an 11-day package. Factors like sex, home size, education level, and income significantly affect visit count. The real value for WTP is 130.755 NPR per entrance, with age, education level, and entrance costs as key influencing factors. Policy recommendations include increasing entrance prices for infrastructure development.

Keywords: Nepal, SHS, NPR, TCM, hot spring

1. INTRODUCTION

Nepal has abundance of natural resources. From basic to sophisticated services, the ecology and its variations in Nepal have given us plenty of products and services. Natural resources are not just for consumption but also for non-consumptive purposes among humans. If the flows of these resources halt or absent on Earth, the flow of ecosystem services will block the human being [1] The unpleasant truth about the wealth of natural resources is that Nepal is not making money under ideal conditions; rather, the way resources are being used shows a disrespect of value and future advantages. Natural hot springs can be defined as water that, percolate from the earth's surface, while the physical and chemical quantity and quality of water changes due heat, pressure and time caused contamination with the parent materials [2] Water interacts chemically with minerals and parent materials undergoing a chemical reaction during this process; therefore, the water table will be reached to the land surface at a lower location with minerals and metallic trace elements believed to be beneficial for balneological treatment. Globally, the development and contribution of the travel industry to income and services is rather generally acknowledged. Any given area's tourist sector relies on a number of elements,

including the unique qualities, natural surroundings, simple access, and hospitality accessible and societal, political, economic, and physical conditions. Nevertheless, the appeal of a place usually attracts guests to address physical discomfort in order to savor the unspoiled quality of the area. Thus, the originality of any natural site and its preservation is a necessary condition for deciding the volume of ecotourism and leisure activities [3]. With the foreign currency equivalent of 67.09 billion earned in the tourist industry in Fiscal Year 2017/18, 2.2% of the GDP overall is contributed. Likewise, out of all the visitors, the most of them go for entertainment—60%, for hiking and climbing 16%, for pilgrimages 14.4% and 9.6% for others [4]. One of the new forms of tourism is hot spring tourism; so, hotspot development can help to raise the average length of stay and expenses. It is believed that visitors' welfare benefits from hot spring recreational use. As people embrace water as pressure help, recuperating, and network feels, the business sector of the hot spring gets steadily too large. While offices divert over from 27,507 (in 109 nations) to 34,057 (in 127 nations) – using 1.8 million personnel – the hot spring advertisements developed from \$51 billion of every 2015 to \$56.2 billion out of 2017. With report of 95% of the revenues [5] the service sector is concentrated in Asia Pacific and Europe. With 25,516 mineral springs around the Asia Pacific, these sources bring approximately \$31.6 billion annually. (2018's GWI). Hot spring tourism is growing in area of hot springs; the knowledge of the worth of this hot spring implies that there will be a rebirth of interest in hot springs not too far away. The development of this resource should be environmentally friendly and consider its effects on humans as well as the surroundings. Nepal boasts hot water springs close to thirty-two in count, according to mineralogists. ([6] Mostly limited in the valley bottoms of the slopes of Mahakali, Karnali, Tila, Kaligandaki, Myagdi, Marsyangdi, Trisuli and Bhotekoshi rivers, these thermal springs are near to the Main Central Thrust. 2004: HMGN. Usually discharged from the subsurface, the regular hot spring is described as the general name for geothermal springs of at least 36.5° Celsius by and large viewed as delightful washing temperature, used for spa, shower, and therapeutic reasons generally [4]. The hot spring is well-known as a therapeutic use since hot water can contain various types of minerals and cure several medical conditions [7]. Many people travel to Singa, hot spring in the Myagdi district. The hot spring is supposed to be meditative of numerous disorders like rheumatoid, skin illnesses, arthritis, etc. On its Facebook page for promotion, Singa claims to get over one million people annually and can host 100 individuals at one time. This result is encouraging in a nation like Nepal where domestic tourism is rather young and the focus is mostly to draw foreign visitors. One of the service industries that might greatly boost the national economy and help to reduce poverty is tourism [6]. Though the expansion of tourism in a nearby hot spring offers employment possibilities, rise in hotels, home stay, restaurants, and handicrafts, etc. But as tourism and the surrounding area developed and hot spring like construction of artificial pools, sanitation, roads, and other infrastructure changed the original state by influencing the natural purity. This results from inadequate planning, poor conservation and management, neglect of monitoring and evaluation of the natural resources linked to tourism and its consequences. Most of the natural tourism sites have either free or minimal admission costs. Not one study has been completed to pinpoint the recreation value hot springs have. Knowing the worth of the recreational space depends on correct valuation of it. The underused country hot springs can be used in numerous ways, including hydrotherapy, steam baths, relaxation in natural surroundings, etc. Though raised in worth by individuals, this one of a kind aspect of the larger part of the administrations is unaccounted, un-estimated, and thus, stays outside the region of the market [6]. The valuation process makes use of non-consumptive value— Singa—as well as non-market valuation techniques. Estimating referrals based on the behavior of visitors who use goods and services and on those who compare travel expenses visitors to a certain (recreational) place [8] helps one to quantify underused value. [9] underline that the approach is mostly applied to estimate the demand or margin assessment curve of leisure facilities. Likewise, among those using the ITCM are [10], [11] and [12]. Since it considers actual human behavior to try to ascertain the value that individuals give to something, the approach of economic valuation of travel expenses reflects overt preferred ways. "The basic premise of the travel cost method is that the time and travel costs people have to visit the site represent the 'cost' of accessing the site," says Travel Cost Analysis, 2017's Valuation E. Therefore, the frequency of visits with

varying travel expenses helps one to determine people's willingness to visit the site. This is like determining people's readiness to sell products depending on the quantity needed at several rates (valuation E., 2019). Maintaining the ecological services is not a simple task for management. It is really difficult and calls for methodical, deliberate action to be performed. Moreover, in the materialistic environment of today, language and economic baggage are the best means of interactively engaging with people and gaining understanding to appreciate the worth and relevance of the ecological services. Valuation of ecosystem services not only informs individuals regarding the financial relevance of different resources and ES but also offers a compelling case for environmental advocacy and litigation. It can simplify the decision-making process and support the development of a market for the financial resource mobilization. Regarding "Health and Wellness Tourism: Spa and Hot spring". In spite of the way geothermal assets as normal underground aquifers connected with the travel industry is a region of considerable financial movement just as a noteworthy commitment to the wellbeing, health and entertainment area in various nations like Japan, Iceland, New Zealand and German [13]. Singa is One of the main tourism attractions is hot springs; Myagdi's hot spring counts several thousands of visitors every year. Although numerous geothermal springs in Nepal remain unexplored, its value has not been performing historically. Any system has limited ecosystem services; we refer to this as carrying capacity. Therefore, while doing a valuation, the emphasis was on the optimization of quality services and limits, and sustainability of Singa. This kind of research will be mainly beneficial in order to maximize the possibilities of fulfilling guests and aiming maximum service. Despite their advantages for the larger society, the site's nature-based recreation and ecotourism service has not been studied and the degree to which society is gaining from these activities is unknown. Although most research on Ecosystem value is conducted macro level rather than micro level or specifically for only one service, this study will help to identify and generally economic relevance as natural resource assets for recreation and ecotourism in Singa hot spring. Nepal has great untapped potential for thermal springs remain unspoiled, underused, and undiscovered. Huge in nature, hot spring tourism can be a profitable addition to the travel industry if properly used and controlled. Although visitors may visit hot springs for its uniqueness within the present infrastructure, we must expand it up, modernize other facilities, and retain natural as feasible if we are to draw foreign visitors [14] By means of travel expenses and visitor willingness to pay for the admission charge, this study seeks to identify the recreational value of Singa hot springs, natural geothermal hot springs, therefore enabling income to be utilized for infrastructure development. By means of sustainable development of infrastructure in SHS, this WTP for entrance fees based on their socioeconomic features helps one to discover the several strategies to increase individuals' contentment from this recreational space. The results are useful for developing policies about Hot Spring management, socioeconomic growth of that area, willingness to pay for the entrance charge, building of a healthy environment between residents and visitors. One of the most significant hot springs in Nepal, SHS attracts on average 60,000 visitors and supports tourism. People visit the main the goal is to take bath and provide a range of ecosystem services such Drinking water, Fish, Spiritual enrichment, house stay, etc. Nonetheless, the SHS has to add another pool and other modern services like Spa by private owned, health resort adjacent site as it has been confronting congested conditions. Consequently, the congested may effect of inadequate maintenance and hygienic standards. This research will help the entrance prices for guests to be reevaluated in order to preserve sustainability, safety, and hygiene. This helped to evaluate several empirical methods for contingent valuation and travel cost. This will help to create a reasonable entrance fee that visitors might pay to support and maintain hot springs financially. Furthermore, the literature on ecosystem valuation in Nepal still is somewhat sparse.

2. MATERIALS AND METHODS

Singa Hot Spring, located in Beni Municipality, is a valuable resource for Nepal, providing relaxation, health promotion, and supporting local livelihoods. It supports local households by providing accommodation, food, and selling local products. The river flows along the hot spring, attracting domestic and international tourism. Studies on Singa hot springs have focused on thermotolerant and

geothermal energy updates. However, the research lacks recreational value and suggests further enhancement of the hot spring from visitor perspectives and calculation of WTP for entrance.

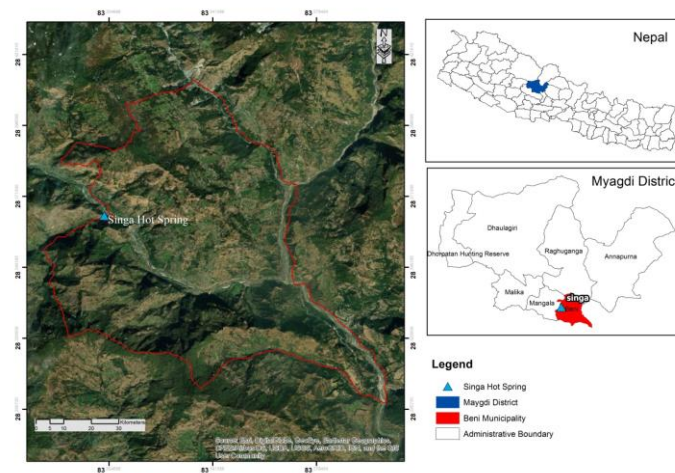


Figure 01: Study Site Singa Hot Spring

This study used data from authoritative websites, journal articles, books, and conference papers to estimate the recreational value and WTP for the entry fee for Singa hot spring. Visitors who visited between March and April 2020 were the subject of a field study, Google form interviews, Key Informant Interviews, and questionnaire surveys. The research focuses on the best season for hot spring bathing, March 2020, with over one hundred guests in each bid. Ten men and ten women were interviewed following each bath regimen, and key informant interviews were conducted with Myagdi.

Table 01: List of Stakeholder that will be consulting.

S.N.	Organizations
1	Babiyachowr Tourism Promotion Committee
2	Singa Tatopani Kunda management committee
3	Home stay Association Babiyachowr
4	Division Forest Office, Myagdi
5	Hotel and Restaurant Association, Babiyachowr

Pandemic illness caused only Highlighted organizations to be contacted. Main data collecting will proceed via the following channels, this study involved visiting the Singa Tatopani Kunda Management Committee and Division Forest Office in Myagdi. Visitors completed a structured questionnaire survey to evaluate the value of ecological services at the hot spring. The questionnaire included questions on socioeconomic, travel, and willingness to pay. The survey was completed by undergraduate Forestry students to ensure accuracy. Data analysis used both qualitative and quantitative techniques, with descriptive statistics used for generalizations and debates. The first ten guests were provided with a detailed overview of the survey's goal to reduce bias. The data was analyzed using Excel, SPSS, and Stata 11.

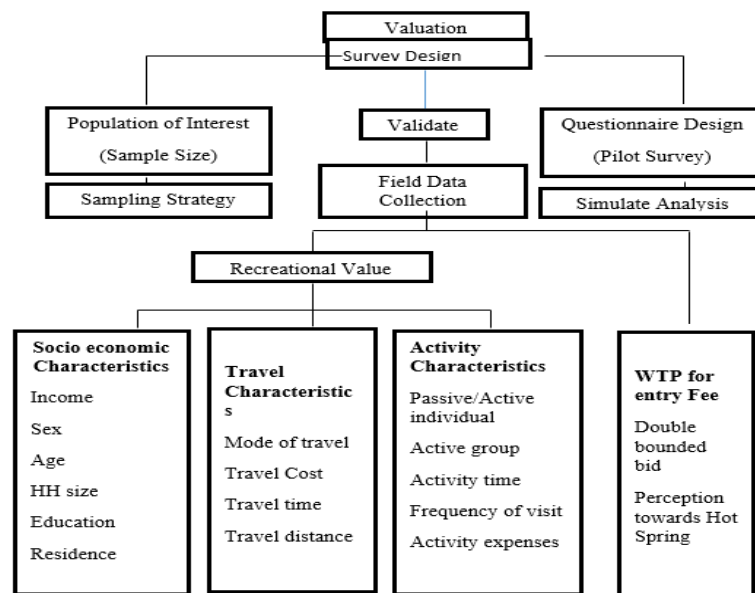


Figure 02: Conceptual Framework for Valuation of Singa Hot Spring

The study used a total expense technique to determine the trip cost to the Singa hot spring. The total travel cost was estimated as the sum of round trip transportation cost, road tax, and the respondent's opportunity cost, including time spent on the hot spring and incremental accommodation costs. This study found that 76% of respondents visited the study site in a group, with the study site being the second choice for recreation travel. Respondents who visited multiple sites mentioned the study site as their second choice for recreation travel. They also indicated that they would not have traveled if the study site was not on the way to the travel locations they visited during the trip. The remaining respondents chose the study site as their main destination or jointly with other sites when deciding to make the trip. The study also assessed the opportunity cost of time spent on the recreation excursion, considering factors such as age, sex, formal education, income, and work. Demographic factors, such as age, sex, formal education, and family income, have the biggest bearing on leisure desires. The number of visits and travel expenses have a negative link, with age being a crucial factor influencing the demand for appointments. The research addressed demographic variables such as age, education, income, employment status, journey days, sex, people's perspective on hot springs, and household size that may affect recreational demand.

Table 02: Definition of Variables in the data set and expected sign of coefficient

Variable Name	Description	Expected Sign
TC	Round Trip Travel Cost	(-)
Age	Age of Respondent	(-)
Edu	Years of formal Schooling	(+)
HHMI	Monthly Household Income of Respondent	(+)
HH	Family size/ Household size of Respondent	(-)
JD	Journey days	(+)
Residence	Visitors that came from	(+)
Dum SEX	Dummy Variables i.e. 1 if respondent is male. 0 if respondent is Female.	(+)
PQ	1 if visitors perception on quality of SHS is better, 0 good,	(+)

Travel Cost Method (TCM) helps us to evaluate a person's inclination for the usage of indirect valuation of non-market commodities like thermal hot spring bath. The travel expenses to the leisure

destinations let one assess the recreational value that each site offers. It is the whole expenses paid for getting to the venue. The TCM is a revealed preference approach whereby the worth of recreation at a leisure site is approximated using the travel expenses to that location and their visiting rates indicate the quantity of recreation they bought ([15] One might create the demand function for the specific site using the trip expenses. Higher the expense of getting to a location, the demand for visiting the site should be lower; vice versa is expected. As so, the demand curve should have a negative slope. The conceptual framework reveals the link between the independent variables—that is, demographic characteristics, trip cost, and perception—and the dependent variable—that is, visiting rate. One can see it in the schematic diagram form as follows.

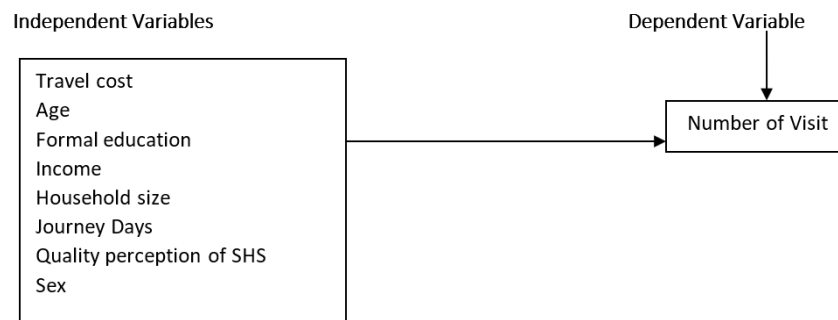


Figure 03: Schematic Diagram of Independent and Dependent variables

By matching demand for a given recreation location—measured as site visits—to its price—measured as the costs of a visit—the TCM assesses the value for recreational usage of that place [15] One can define a basic TCM model with a "trip-generation Function" (TGF) such $V = f(C, X)$ (1) Where, V = site visit rate?

C = site travel expenses

X = additional socioeconomic factors that notably explain V .

The personal travel cost paradigm as:

$V_{ij} = f(C_{ij}, E_{ij}, A_i, Y_i, H_i, JDi, Mi, Si, Pi)$ (2)

Where would one find? V_{ij} = annual visit count for each individual visiting site j

C_{ij} = the overall cost of visits to site j .

E_{ij} = Individual level of education

A_i = personal age i

Y_i = personal household income of i

H_i = personal household size JDi = Individual i 's travel days

Pi = Perception of SHS; Mi = dummy variable

Si = Individual's sex value

Ri = People from whom visitors arrived

The demand function's realism relies on the travel number probability distribution, considering the utility value of leisure activities. The annual aggregate value of site visits is estimated as $AV = OE\% * CSuntu$, with surveys aiming to gather demographic data to determine the WTP for entrance fees.

3. RESULTS AND DISCUSSION

For public transport the ticket price as computed for journey cost; for private, i.e., bike, car, merely fuels, parking charge and road tax taken from the municipal transportation management committee the bus, Jeep and taxi ticket prices were. Most of the travelers in this study came from Beni, Pokhara, Baglung, and Parbat; so, two-way expenses are computed while other substitute sites travel expenses

are not computed in this study. Travel cost (TrC) = the last station arriving from + Back to Beni. Table shows the distance, expected travel time, average fuel cost from Baglung, Parbat and Pokhara, to Beni.

Table 03: The distance to reach SHS by different means of transportation.

Private vehicle: Car, Bike	Baglung	Parbat	Pokhara
Distance (KM)	22	28	74
Estimated time (Min)	55	120	180
Average fuel cost(NRs)(40MPG@fuelcost126)	69.3	88.2	233
Public transport Bus, Jeep and Taxi		Beni to SHS (9Km)	Pokhara to Beni (74 Km)
Bus fare (NRs)		90	265
Taxi fare (NRs)		200	650
Jeep fare (NRs)		150	450

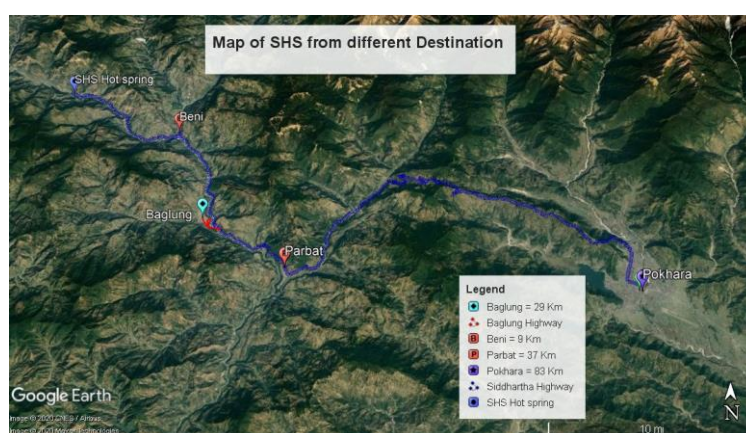


Figure 04: Map Showing the distance from different Location

Back to Beni is just calculated as travel expense from Beni majority of the visitors expected to have the end of journey for this hot spring and went to other substitute destinations from this area. Thus, only travel to Beni to reduce the over computation of the trip expenses. This study focused on the travel cost estimate for guests at the Singa Hot Spring (SHS) in Myagdi District, Nepal. The majority of guests visit multiple sites, with accommodation costs being the main expense. The opportunity price of time is the rate of pay if someone misses work hours for travel. This study considered 25% of the pay rate as an opportunity cost and serves as a surrogate for the time opportunity price. The total cost of SHS travel includes travel cost, lodging charge, access fee, miscellaneous expenses, and time cost. The maximum visitors come from October to March, with the longest stay lasting 11 days. The SHS has three bath tubes and one mini pool, with an average of 400 visitors per day during peak season. In fiscal year 2075/2076, 18264 persons visited the hot spring for bathing for 7 to 10 days to cure. The entrance charge brought in over NRs 8,000,000 overall. The respondents were mostly female and male, with 30.3% having a bachelor's degree, 16.6% having a higher education, 15.2% having a higher education, 9% being literate, and 4.8% being illiterate. The statistics show that 55.37% of total visitors are employed and business, followed by 17.35% students/unemployed/retired, 10.75% in the agricultural sector, 7.43% foreign, and 2% in the service sector or NGO.

Table 04: Socio-economic and Demographic characteristics of sample Respondent

S.N.	Variables	Categories	Percentage	n=121
1	Age (years)		40.49	
2	Household size		4.86	
3	Sex	Male	62%	141

		Female	38%	86
		Illiterate	4.8%	7
4	Level of Education	Literate	7.6%	11
		SEE	15.2%	22
		plus 2	16.6%	24
		College	30.3%	44
		University level	9%	13
5	Location	Myagdi, Parbat, Baglung >25KM	5.1%	8
		Pokhara, Mustang, Gorkha <25 Km- >100 Km	43.4%	63
		<100km ->200 Km	13.8	20
		<201 Km	20.7%	30
6	Monthly income	Zero Monthly Income	25.60%	31
		1-10000	5%	6
		10001-20000	31.4%	38
		20001-30000	19%	23
		30001-40000	10%	12
		>40001	9%	11
7	Profession	Business/ Private jobs	55.37%	67
		Government Job	6.60%	8
		Student/ Unemployed/Retired	17.35%	21
		Foreign	7.43%	9
		Service/ NGO	2.5%	3
		Farmer	10.75%	13

Of the guests questioned, 20.66% had travel times less than one hour to reach SHS; 56.19% had journey times between one hour and two hours. 11.57% had travel times of two to three hours; 9.08% have to go three to four hours; 2.5% had journey times of more than four hours. While 26.44% remained for 4-6 hours and 14.07% stayed for more than 6 hours and 5.78% stayed up to 0-1 hour, 53.71% of visitors stayed between 2 and 4 hours. Of all the visitors, 44.62% were riding a bike to go to the SHS; followed by bus 33.05%; vehicle by 8.26%; Jeep by 7.47%; and taxi by 6.61%. Of the visitors, most had recreational goals (91.75%), followed educational (3.3%), and spiritual (4.95%). About 57.85% for Mustang, 30.87% for Dhaulagiri Base camp and Gurja and 8.28% near the adjacent area like Galeshowr Temple, Baglung Kalika Temple, etc., most visitors came to see only this SHS. About 44.62% of respondents visit SHS for the first time, 36.36% for the second, 13.24% for the third and more than 4 times is about 5.78% [16].

Table 05: Travel Characteristics

S. N.	Variables	Categories	Percent	n=121
1	Duration to reach SHS (Hrs.) from the last station	0-1 Hrs.	20.66 %	25
		1-2 Hrs.	56.19 %	68
		2-3 Hrs.	11.57 %	14
		3-4 Hrs.	9.08 %	11
		More 4 Hrs.	2.5%	3

2	Stay Duration only in hot bath	0 - 2 Hrs.	5.78 %	7
		2 - 4 Hrs.	53.71 %	65
		4 - 6 Hrs.	26.44 %	32
		> 6 Hrs.	14.07 %	17
3	Mode of Transport	Bike	44.62 %	54
		Bus	33.05 %	40
		Car	8.26 %	10
		Jeep	7.47 %	9
		Taxi	6.61 %	8
4	Motive	Recreational (hot bath, landscape view etc.)	91.75 %	111
		Educational	3.30 %	4
		Spiritual	4.95 %	6
5	Status of Substitute recreational sites	Only this site	57.85 %	70
		Mustang	30.57 %	37
		Dhaulagiri Base Camp trekking	3.30 %	4
		Kalika temple and adjacent place	8.28 %	10
6	Frequency of Visit	First Time	44.62 %	54
		Second Time	36.36 %	44
		Third Time	13.24 %	16
		Fourth Time	5.78 %	7
7	Number of visitors	Minimum No. of visitor (Monday, Tuesday,)		100
		Maximum no. (Friday, Saturday, Sunday)		400
8	Average no. of visitors	Per day (off season, Peak season)	100	400
		per month (off season, Peak season)	1000	12000
		per year		60,000

To investigate how the trip cost affected the site visitation count, the linear regression was conducted. At 5%, the overall cost was notably more using a negative regression coefficient. This implies that there are less visits the more expensive travel is contrasts the trip per season (visit rate) against the cost of travel for leisure bathing in the hot spring at Singa. Using transportation costs and an opportunity cost of trip time, the cost of travel in the figure is computed using a 25% pay-per-view basis [17].

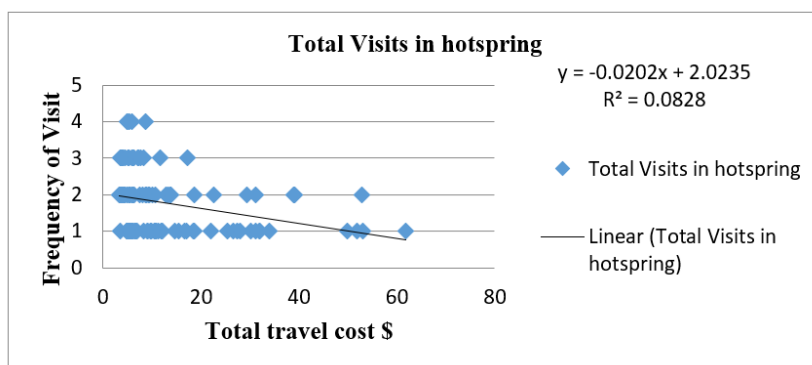


Figure 05: Relationship between No. of visit and travel costs

The influence of a small number of outsiders in the lower left corner seems to be the reason most of the observations seem to be compressed; either a lot of time and money or a lot of travel requires either very little or none at all.

Table 06: Regression of number of visit and total travel cost

Variables	Coefficients	Std. Error	Sig.
(Constant)*	2.02351	.10583	.000
Travel cost*	-0.02022	.00617	.00137

*implies coefficient significant at 5% level of significance

Dependent Variable: Total number of visit

Independent Variable: Total travel cost to visit

Table 07: Model Summary of regression analysis

R Square	Adjusted R Square	Sig. F Change	Durbin Watson
0.08285	0.07514	0.00137	1.895

The regression output is summated in this table. The test indicates that at 5% level of significance the model is statistically significant. The model produced the adjusted coefficient of determination (adjusted R square) of 0.08285, implying that total trip expense explained 82.85% of the total variance in the number of visits. $a = 2.0235$ and $b = -0.0202$; the derived linear equation is $V = 2.0235 + (-0.0202x)$, where the number of visit (V) equals 2.0235 when the travel cost is 0. The table shows the number of visits together with the variations in travel expenses [18].

Table 08: Table showing different number of trips at different travel cost

Travel Cost (US\$)	Number of visit In a year
0	2.0235
15	1.72
30	1.42

45	1.11
60	0.81
75	0.51
90	0.21
100	0.00

The table shows that while travel cost is US\$ 100 the number of visit is zero; whereas, when the travel cost is zero there is a maximum number of visit, i.e., 2.0235. If the travel expenses exceed US\$100 for one visit, none of the visitors show up. Several regressions were conducted to investigate how various factors affected visitor visit count. With a 5% level of relevance, the only place from which visitors came from that has substantial value. Positive regression coefficients abound for sex, home size, education level, visitor perception, journey days, monthly income towards SHS. Against the total visits, the coefficient on age, household size, total cost, and place from whence visitors came from exhibits a negative regression coefficient. Since long flights are expected, public expenses are inversely correlated with SHS frequency of visit. This suggests that the frequency of the trip taken by the visitor to reach the SHS will be less the less the expense of the travel paid for. Given a negative sign for age but a statistically negligible value, it suggests that younger people visit more often than elderly age. Moreover, if the house size grows, the frequency of visits will be less. Visitors from adjacent or surrounding areas have more visits than those who came from vast distances. Higher the degree of education, the more visits one should expect as there is favorable indication for education [19]. Apart from monthly income, it influences recreation demand as well; this suggests that if tourist income rises, visit frequency also changes. Male shows good influence on several visits; so, the number of visits increases when the view of SHS is better.

Table 09: Correlations Matrix of Variables

Variables	Sex	Age	HH size	Edu.	Perception	Journey day	Income	TC	Place From	Visit rate
Sex	1									
Age	-0.047	1								
HH size	-0.095	0.234	1							
Edu. Level	-0.139	-0.242	-0.192	1						
Perception	0.308	-0.052	-0.017	0.023	1					
Journey Days	0.039	0.391	0.031	-0.130	0.038	1				
Income	-0.097	0.155	-0.201	0.028	-0.072	0.007	1			
Total Cost	0.028	0.483	0.127	-0.221	-0.009	0.913	0.074	1		
From Where	0.179	0.048	-0.097	0.128	-0.058	-0.131	0.089	-0.046	1	
Visit Rate	0.035	-0.203	-0.178	0.122	0.151	-0.205	0.052	-0.288	-0.237	1

Table 10: Estimated Results of Multiple Regression Model

Variables	Coefficients	Standard Error	t Stat	P-value
Intercept	2.63259	0.57397	4.58667	1.2E-05
Sex	0.10848	0.16443	0.65974	0.51079
Age	-0.0013	0.00802	-0.1573	0.87526
HH size	-0.0657	0.05237	-1.2546	0.21227
Edu. Level	0.04154	0.05789	0.71764	0.47448
Perception	0.11758	0.09538	1.23271	0.22029
Journey Days	0.03271	0.07007	0.46683	0.64153
Income	0.00041	0.0004	1.02985	0.30532
Total Cost	-0.0259	0.01667	-1.5508	0.12381
Residence From	-0.2431	0.082	-2.9647	0.00371*

a. Dependent Variable: Visit rate SHS

*implies coefficient significant at 5% level of significance

Table 11: Result on multiple regression of visitors on travel cost.

R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics	Durbin-Watson
			Sig. F Change	
.20497	.14051	0.78927	.00186	2.027

Predictors: (Constant), sex, age, perception, journey days, Stat from came, income, Edu, size, Tc
Dependent Variable: Number of visits SHS

The following is the output from above the regression equation: $V_{ij} = 2.632 + .1084 \text{ Sex} - .0013 \text{ Age} - .0657 \text{ hh} + .41 \text{ edu} + .117 \text{ per} + 0.032 \text{ JD} + 0.00041 \text{ In} - .0259 \text{ TC} - .2431 \text{ Res} + e_{ij}$

The coefficient of cost of trip indicates that the frequency of visitors visiting a site decreases with higher travel costs. Age, household size, income, education level, visitor impression, journey days, and sex also have negative relationships. The number of visits decreases with an increase in income. The regression equation calculates the demand function for average site visitors, with consumer surplus lying under the curve. This study highlighted the importance of visitor variables in visitor behavior [20].

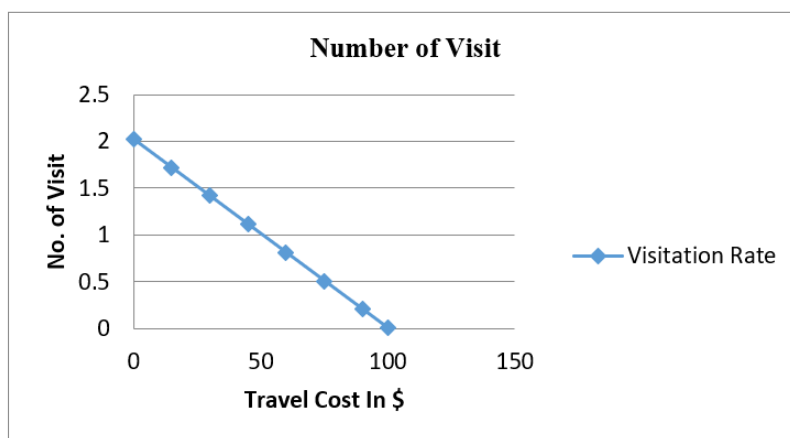


Figure 06: Demand Curve

The mean number of visits of the visitors/coefficient of trip cost $= -2.0235 / -0.00202 = 100.173$ US\$ consumer surplus. With US\$ = NPR 121.8 exchange rate, the average consumer surplus for the aforementioned function is 100,173. This explains the site experience in whole. This study did not determine offsite attributed value. Therefore, the annual value of each person in SHS was NPR 12,201.07 (US\$ 100.173). With about 60,000 visits annually in 2019, SHS's yearly entertainment value was NPR. 732,064,284 (US\$ 6,010,380). In terms of per visit consumer surplus, there is some hint of it. SHS has a consumer surplus of US\$ 100.173 and yearly recreational value of US\$ 6,010,380. The entrance fees to access Singa hot springs are already in place. Table shows the intended readiness to pay for Singa Hot Spring. The initial price of 75 NPR per submission caused most of the respondents to react as follows: Yes-Yes around 68%, Yes-No about 16%, and No-Yes about 16%. About the first bid II in the value of 100 NPR, 40% of the respondent said Yes-Yes and 32% of them said they would not like to pay the amount greater than 100 NPR, so they responded Yes-No and the remaining 28% responded No-Yes. The 52% were not willing to pay 125 NPR i.e., they responded to No-Yes and visitors do not want to pay any entry fee found to be 8% answered for No-Yes. In initial bid III (125 NPR), 16% of the population agreed to pay the initial bid 3. For the first bid IV of 150 NPR, the majority is the No-Yes with 56%; 28% of the population responded as Yes-No; 12% of the population responded Yes-Yes and 4% stated not want to pay any price i.e. No-North [21].

Table 12: Response of the respondents to the proposed bids

Response		Initial bid I (NPR 75)	Initial bid II (NPR 100)	Initial bid III (NPR 125)	Initial bid IV (NPR150)
Yes-Yes	Frequency	17	10	4	3
	Percent (%)	68	40	16	12
Yes-No	Frequency	4	8	6	7
	Percent (%)	16	32	24	28
No-Yes	Frequency	4	7	13	14
	Percent (%)	16	28	52	56
No-No	Frequency	0	0	2	1
	Percent (%)	0	0	8	4

Regarding the estimation of willingness to pay, the double-bounded model performs effectively. Table 16 details on the variables applied in the double-bounded model. Two bound models were applied in Table with a sample of 100 then the desire to pay in Singa Hot Spring was approximated. The double-b command can simply declare $WTP = \beta/\hat{\beta}$ and directly estimates β . Double-b lets one estimate σ^2 and $\hat{\beta}$ directly with maximum likelihood. WTP is just the constant without control variables; so, the mean of WTP is 128.508 NPR per entry [22].

Table 13: Description of variables

Variables	Definition
Bid 1	Initial bid (NRs)
Bid 2	Second bid (NRs)
Answer 1	Yes for first WTP question
Answer 2	Yes for second WTP question
Age	Age grouped to 0-5 categories (<18,19-30,31-40,41-50,51-60, >60)
Gender	Female 0 and male 1
Occupation	Occupation grouped to 0-6 categories student, Govt employee, Business, Farmer, unemployment, job and other
Education	Literate 8, SEE 10, Plus 2 12, Bachelor 16 and Masters 18
Consideration for entry fee	Too Much 0, Should not pay 1, Acceptable 2 and Too little 3
Income	Income grouped to 0-5 (0-10000, 10001-20000,20001-30000,30001-40000 and >50000)
WTP	Yes 1 and No 0
Perception toward Hot spring	Scale from 1-5 (1 for best and 5 for worst)

Table 14: Model without control variables

	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
Beta _cons	128.5081	3.456219	37.18	0.000	121.734	135.2821
Sigma _cons	30.2866	2.824584	10.72	0.000	24.75051	35.82268

Negative 125.65964 is the log probability. First-bids Variable: bid 1; second-bid Variable: Bid 2

First-Response D dummy variable: response Second-Response Dummy Variable: response 2

One can design the double-bounded model as function of all variables and assess influencing factors on willingness to pay using it as well. $WTP_i = \beta^0 + \beta^1x_1 + \beta^2x_2 + \beta^3x_3 + \beta^4x_4 + \beta^5x_5 + \beta^6x_6 + \beta^7x_7 + \beta^8x_8 + \beta^9x_9 + \beta^{10}x_{10} + \beta^{11}x_{11} + e$ x_1 indicates gender, x_2 indicates age, x_3 indicates education, x_4 occupation, x_5 indicates household size, x_6 indicates income, x_7 location they came from, x_8 indicates length of stay, x_9 indicates the perception towards hot spring, x_{10} consideration for entry fee, x_{11} WTP. Where WTP i represents willingness to pay of the respondent Table described the significant coefficients of the double bounded model as well as its control (explanatory) variables.

Model with explanatory variables was composed as follows: $WTP = -3.86 - 7.78G + 7.87A + 4.31E + 1.22O - 0.52H + 4.25I - 1.64D - 1.82S - 13.28P + 10.82C + 73.22W$. G stands for gender, A for age, E for education, O for occupation, H for household size, I for income, D for place of origin, L for length of stay, P for view of the hot spring, C for consideration towards Hot spring, W for willingness to pay. The findings showed that factors including age, education, and consideration had a major influence on the Singa hot Spring playability. Among the factors affecting the desire to pay, education, and age, age was seen to be the most important one. Higher education will result in high WTP depending on their degree of knowledge. In the [23] study on Recreational Demand for Fewa Lake, Nepal WTP was clearly impacted and significant by age, education, location, and month to month wage.

Table 15: Model with explanatory variables

Beta	Coef.	Std. Err.	Z	P> z
Gender	-7.781342	6.418362	-1.21	0.225
Age	7.871185	3.267218	2.41	0.016
Education	4.314659	1.311815	3.29	0.001
Occupation	1.22441	1.855232	0.66	0.509
HHs	-.526174	2.307121	-0.23	0.820
Income	4.259388	2.804291	1.52	0.129
Origin	-1.649712	2.887986	-0.57	0.568
Stay duration	-1.828852	1.327931	-1.38	0.168
Perception	-13.28777	6.645847	-2.00	0.046
Consideration	10.82188	4.419926	2.45	0.014
WTP	73.22846	5461.814	0.01	0.989
_Cons	-3.860572	5461.864	-0.00	0.999
Sigma _cons	24.15918	2.329765	10.37	0.000

Chi Square = 39.92; log likelihood = -102.8573; Prob > chi2 = 0.0000.

Bid 1 is first-bid; bid 2 is second-bid. First-response dummy variable: response. Second-response dummy variable: response 2 This study analyzed the availability of payment and found that the real value for WTP using explanatory variables to be 130.755 NPR. (is about US\$ 1.073) every entrance. Table showed the mean WTP. The WTP with or without variables clearly does not change very much in value (128.5081~130.655). For WTP, these two values practically coincide in this investigation. Table indicates that the WTP of the respondents depended on the variables (age, education, opinion of Hot Spring, and consideration of past entry costs at the 95% level of significance). Among these factors, education had the most impact on WTP. In this case, the estimate of the WTP was found to be influenced by age, consideration of past entrance costs, and view on the hot spring [24].

Table 16: Mean of WTP

	Coef.	Std. Err.	z	P> z
WTP	130.755	3.268978	40.00	0.000

Study on Nepal's willingness to pay for hot springs using a contingent valuation approach with a double-bounded model shows a higher willingness to pay than other studied regions. Studies show a mean willingness to pay for entrance charges in Langtang National Park and Chitwan National Park, with 89% of tourists willing to pay more than previous entrance costs [25].

4. CONCLUSION

Conducting a recreational valuation of Singa hot spring's value was the primary goal of this project. The recreational value of SHS was approximated using several approaches. The techniques applied include Contingent Valuation Method (CVM) for Willingness to pay the entrance charge and Travel Cost Method (TCM) for recreational value. Estimation of the recreational value of SHS, consumer surplus per visitor

per trip, the number of visits is crucial if one wants to reach the target. The Individual Travel Cost Method was applied to reach the goal, so a questionnaire survey was conducted. Using a sample of 121 site users, the dependent variables of this study count data type and the regression model was applied to project the model. The estimation and computation in MS Excel and SPSS 23 edition were done mostly using the primary statistical program. The following is the main discovery. Singa hot spring has an estimated yearly value per person of 100.173 US\$ (NPR. 12, 201). Singa hot Spring's annual total tourism value was calculated at US\$ 6,010,380 (NPR 732,064,284). In multiple regression analysis shown that frequency of visit is significantly influenced by just visitors from. Furthermore, with regard to sex, education level, perception of SHS, number of journey days, monthly income, and tourists from have a positive regression coefficient. On the other hand, with frequency of visit, age, household size, travel cost has negative relationship coefficient. Double-bonded closed-ended questionnaire was used using the contingent valuation technique to investigate the influencing factors on WTP. From Google forms, the information of one hundred responders was gathered; these are persons who had visited the hot spring previously. Estimation and computation in MS Excel and STATA 11 version were done mostly using the main statistical program. Here is the main discovery. WTP for the entry charge had a mean value of NPR 130.551/person each visit. The study deduced from visitor Willingness to Pay (WTP) that, should hot spring quality be kept and enhanced, visitors are ready to pay extra entrance fees. Investigating the variables influencing WTP, the study revealed that WTP of the respondents at a 95% level positively depended on age, education level, and consideration of prior admission costs. Moreover, WTP for greater entrance fees was not significant but rather positively depending on occupation, income, WTP. WTP was not connected with or negatively dependent on, though, the gender, household size, the place the respondents came from, or duration of stay of the respondents. Thus, the study came to the conclusion that the key influencing elements in this study were just three variables: age, education level, and consideration of prior entrance costs. The recommendations at the policy level have been enumerated in following bullets, according to this study, consumers are ready to spend much more for the hot spring than for the prior admission cost. Hence, an entrance price ought to be increased. This would instantly create extra income to pay for hot spring infrastructure development's running and maintenance costs. The base for improving visitors' experience is the state of the road; so, cooperation with the road department for simple access will help to improve the experience of visitors and hence raise their count. Introduction of bus service from the main bus stop instead of the Myagdi river bus stop to appeal tourists from the Mustang and other locations also. Better management of the hot spring and future planning depend on the information of visitors being recorded. tourists' infrastructure needs to be built such tourists can stay up too late evening or recreate after the bath so that their stay period in hot spring will rise, tourism infrastructure such bicycle trail, trail light, home stay. Urgent construction of a dam close to a river site; coordination with other development agencies and district development should help to build the dam. Since there was no waste disposal facility, suitable numbers of waste disposal sites should be developed. Looked small and dusty; food quality and services, hospitality, hygiene, sanitation, restroom, appeared to be inadequate; accommodation, entertainment services and lodging amenities are still inadequate and not satisfying. The management committee should assist guests in selecting their own hot spring pool, taps or bathtub for bathing, and service; also, it should be aware of hygiene and safety and handle it promptly. Enough foundations for a thorough investigation on SHS have been shown by this short-term study. We really need to investigate the value of SHS. Singa hot spring offers several ecosystem services that nevertheless have value to be discovered. Comprehensive studies on these services might enlighten people on the value of hot springs and support environmental preservation.

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