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Department of Geography Education,
Central Department of Education, T.U., Kathmandu, Nepal

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Assessing Multiple Benefits of Community-Based Ecotourism: Evidence from Annapurna Conservation Area Project (ACAP) Region, Kaski District

Rajan Binayek Pasa[1], Suman Kumar Shrestha[2]
[1]Lecturer, Central Department of Rural Development, Kirtipur
[2]Lecturer, Sanothimi campus sanothimi, Bhaktapur
Correspondence Email: shresthasuman1971@gmail.com

Abstract

This study analyzes multiple benefits of community-based ecotourism in the ACAP region, located in Kaski District. The research focuses on the economic, social, cultural, environmental, educational, and health benefits of community-based ecotourism. A cross-sectional survey design was used to collect data from 234 tourism entrepreneurs through self-administered questionnaires. The findings suggest that ecotourism has contributed significantly to local economies, generating substantial annual income, creating employment opportunities, and fostering the economic growth of local communities. Ecotourism has been shown to positively influence family income, household expenditure, and overall economic stability among tourism entrepreneurs. The study also highlights the broader social and cultural impacts, with increased awareness and engagement in conservation efforts, as well as improvements in community health and education. The involvement of the communities in tourism entrepreneurship has further strengthened the link between ecological preservation and economic benefits, creating a sustainable model of rural development. Overall, the research underscores the growing importance of ecotourism as a key driver of rural livelihood improvement in the ACAP region. The findings suggest that ecotourism is not only a source of income but also a means of enhancing community resilience, environmental stewardship, and cultural preservation. The study advocates for the continued promotion and development of ecotourism by government agencies, emphasizing its role in achieving long-term multiple benefits of community-based ecotourism in the potential areas of the country.

Keywords: Tourism, community-based ecotourism, ACAP, social demography, multiple benefits

Introduction

Ecotourism refers to eco-efficient tourism practices that aim to foster socio-cultural, economic, and environmental development while minimizing human impact on the environment (Villepontoux, 2013). The concept emerged in the 1980s in response to environmental degradation linked to tourism development. By the 2000s, the World Tourism Organization (WTO) promoted ecotourism as a sustainable tourism model, emphasizing the balance between ecology and economy. Protected areas, as defined by the International Union for Conservation of Nature (Dudley, 2008), are key sites for sustainable natural resource management, where legal frameworks ensure the long-term conservation of nature, ecosystems, and cultural values.

Studies such as Kannaujiya and Arora (2019) highlight the transformative role of private tour operators, NGOs, local communities, and governments in addressing challenges and driving development in ecotourism sites like Koti-Kanasar village, India. Similarly, Vimal, Gatiso, and Mathevet (2018) emphasize the importance of adaptive management and monitoring programs in protected areas, focusing on natural resources, community engagement, and law enforcement. In Nepal, Aryal, Ghimire, and Niraula (2018) review action plans for ecotourism, noting that while ecotourism is recognized as a conservation funding source, the lack of specific species-level policies requires further research and policy development. In the ACAP region, Pobocik and Butalla (1998) observe the positive impact of ecotourism on local livelihoods, particularly through trekking-related income such as accommodation, food, and porter wages.

Ecotourism in Nepal integrates conservation, community development, and sustainable travel, benefiting millions in buffer zones surrounding protected areas (Pradhan & Gradon, 2008; NPWCA, 1992). The conservation funds allocated for awareness programs, income-generating activities, and infrastructure development play a vital role in supporting rural development and poverty alleviation (Binns & Nel, 2002). Tourism has significantly contributed to Nepal's economy, creating jobs and supporting rural development, particularly in remote areas. This study explores the multiple benefits of community-based ecotourism in the ACAP Region, focusing on its economic, social, cultural, environmental, educational, and health impacts.

Methods and Materials

The study area

ACAP established in 1986 is the largest protected area in Nepal that covers an area of 7,629 km2. It is home to over 100,000 residents of different cultural and linguistic

groups. It is located in the hills and mountains of west-central Nepal (83057'E, 28050'N), covering five Districts; Kaski, Lamjung, Manang, Myagdi and Mustang (Nepal et al., 2002). ACAP is rich in biodiversity and is a treasure house for 1, 226 species of flowering plants including five centimeter tall yellow and pink colored Loderi variety of rhododendron, 105 mammals, 518 birds, 40 reptiles and 23 amphibians (ACAP, 2019). ACAP is popular for mountain views, world deepest gorge (Andha galchhi), Tilicho lake located in world highest altitude and world best trekking trails in the world. The Hindu famous temple Muktinath is also located in Annapurna conservation area.

ACAP is divided into 7 unit conservation offices; Jomsom, Manang and Lo-Manthang in the trans-Himalayan region and Bhujung, Sikles, Ghandruk, and Lwang on the southern parts where the study area Annapurna Rual Municipality (ARM) is located. The Dhikurpokhari, Lumle, Salyan, Bhadauretamagi, Dangsing, Ghandruk village development committees (VDCs) were indexed in ARM while restructuring federal state. ARM is surrounded by Machhapuchchhre Rural Municipality on the East, Myagdi District on the West, Manag District on the North and Parbat District and Pokhara Lekhnath Metropolitan City on the South. It has total 417.74 km2 area elevated up to 4528 feet from sea level. ARM has eleven administrative ward offices in which headquarter is located in Dhikur Pokhara on the way of Ghandruk. Here are two climate zones such as subtropical zone and temperate zone. The total population of ARM is 23,565 with 56.411/km2 density (CBS, 2011). Ghandruk, Kande, Naudanda, Landruk, Lumle, Chhomorong, Tolka, Annapurna Base Camp and Machhapuchhre Base Camp are the major tourism destinations of ARM.

Philosophical consideration

This study adopts a post-positivist research paradigm, which is grounded in objective ontology and deductive epistemology. The post-positivist perspective assumes that reality exists independently of human perceptions, and that it can be understood through objective measurements and empirical observation (Creswell & Creswell, 2018). The research focuses on the economic, social, cultural, environmental, educational, and health benefits of community-based ecotourism in the Annapurna Conservation Area Project (ACAP) region of Kaski District. By employing this paradigm, the study seeks to establish measurable relationships between variables, providing a clear and quantifiable understanding of the impact of ecotourism. The objective ontology underlying the study posits that these benefits can be identified, quantified, and analyzed in a way that is independent of subjective interpretations.

In terms of epistemology, this study follows a deductive approach, where existing ecotourism theory and its multiple benefits framework developed by International Ecotourism Society. This approach emphasizes the use of objective data and statistical tools to establish patterns, relationships, and causal effects. By applying post-positivism, the study maintains a focus on empirical data, relying on statistical analyses to reveal insights about the various benefits of ecotourism in the region. The integration of objective ontology and deductive epistemology ensures that the findings of this study are grounded in measurable evidence, providing a robust basis for understanding the impacts of community-based ecotourism.

Research design and data sources

This study adopts a cross-sectional survey design to assess the ecotourism benefits in the ACAP region (Gupta & Gupta, 2015). The survey was purposively conducted in Annapurna Rural Municipality of Kaski District where there are about 354 tourism establishments or entrepreneurs (cluster A: 78 hotel/resorts + cluster B: 202 lodge, guest house, homestay + cluster C: 74 restaurants, bakery, coffee shop and tea shops) (ARM, 2019). Of the total, necessary data are collected from 234 sample entrepreneurs (63, cluster A + 133, cluster B + 47, cluster C) that is generated with 95% confidence level and 5% marginal error (Krejcie & Morgan, 1970). The household survey was conducted from October 02, 2019 to November 21, 2019. The Cronbach's Alpha value of tools is 0.73 (reliable) with total 10 numbers of items. They are economic benefit index (0.69), social benefit index (0.68), cultural benefit index (0.67), environmental benefit index (0.70), educational benefit index (0.70), health benefit index (0.69), knowledge index (0.68), attitude index (0.69), practice index (0.69) and social demographic index (0.70) (Cohen et al., 2007; Taber, 2017).

Methods of data analysis

The software SPSS version 27 was used for analyzing the data. In doing so, we use both descriptive and inferential statistical tools. The information related to characteristics of the tourism entrepreneurs have been presented in frequency table. The study also used composite indexing method for computing items variable (Chakrabartty, 2014). The principal component method was used to obtain Social Demograpy Index as well as Knowledge, Attitude and Practice index. Finally, multiple regression models are used to establish the association between dependent variables and predicted variables (Field, 2009). These methods together provide a comprehensive understanding on multiple benefits of community-based ecotourism in the lives of communities residing in Annapurna rural municipality of Kaski District. Field, A. (2009

The data analysis in this study is organized into six sections: a descriptive overview of the ACAP region, tourism entrepreneurs' demographics, trend analysis of tourist arrivals from 2009 to 2022, an examination of tourism-related budgets and tourist flows, multiple benefit analysis and measurement of association.

Results and Discussion

Characteristics of the tourism entrepreneurs

Of the total 243 respondents, 191(78.6%) are ancestral living and 52(21.4%) are migrated (only 6 from home district). The highest 21 respondents belong to age group 40 years (modal age). The range of age is 54 years (74-20 years). The majorities 223(91.8%) of the respondents are married. The total population is 1470 (female, 51.56% + male, 48.43%), average family members is 6.04 and active population 72.17 percent. The most 107(44.4%) respondents are literate whereas 41(16.9%) completed higher education. The literate people are performing leadership role thoughtfully than educated youths. Pasa (2021) also found limited transformative role of education in Panchmul, Nepal. Informal and non-formal education is directly interfacing in community levels for maintaining social relationships and family well-being whereas educated youths are struggling in urban centers for joining government jobs for better social identity. That is why Pasa and Kharel (2020) thus suggested transforming ranked society into just society through the transformative education system that stimulates inner will power of the educated persons and make them potential human capital. Likewise, 41(16.9%) respondents are receiving remittance and 96(39.5%) have their own personal transportation. The 163(67.1%) respondents have paddy field (509 m^2 to 15262 m^2) and 242(99.6%) respondents have farming land (509 m^2 to 14244 m^2). Likewise, 224(92.2%) respondents are also rearing domestic animals. The majorities (73.3%) of the respondents are Janjati and remaining are Brahmin/Chhetri (23.5%) and Dalits (3.3%). The status of Dalits in ARM is poor comparing to upper caste groups. Pasa and Bishwokarma (2020) thus argued that Dalit are still far behind to be cooperated with so-called non-Dalit into the frame of caste-based structure and suggested to implement 5Es approach (envisioning-educating-empowering-ensuring-encouraging) for promoting Dalit in national mainstreaming.

Tourist arrival by year

This section presents statistical information regarding the number of tourists who have visited Nepal in a particular year (Table 1).

Table 1: Tourists Arrival by year (2009-2022)

Year	Male	Female	Total
2009	288155	221801	509956
2010	361611	241256	602867
2011	352059	384156	736215
2012	439270	363822	803092
2013	449058	348558	797616
2014	445627	344491	790118
2015	289158	249183	538971
2016	399091	359911	753002
2017	509585	430633	940218
2018	624928	548144	1173072
2019	634392	562799	1197221
2020	124048	106037	230085
2021	105410	45552	150962
2022	358683	256012	614869

Source: Tourism Statistics, 2009-2022

Table 1 shows the significant fluctuations in tourist arrivals due to external factors. In 2009, Nepal welcomed 509,956 tourists, with males making up the majority (288,155) compared to females (221,801). Tourism numbers steadily increased until 2013, reaching 803,092 in 2012, before the 2015 earthquake caused a sharp decline to 538,971. The sector began recovering, but the COVID-19 pandemic in 2020 led to another significant drop, with arrivals falling to a record low of 150,962 in 2021.

Tourism rebounded in 2022 with 614,869 visitors, though numbers remain below pre-pandemic levels. Throughout the period, male tourists consistently outnumbered females, although the gender gap narrowed in years like 2011 and 2016. The data underscores Nepal's tourism sector's vulnerability to global events such as natural disasters and pandemics, while also highlighting signs of recovery in recent years, offering optimism for future growth.

Flow of tourists and tourism sectorial budget

In 2018/19, a total of 181,746 inter/national tourists (60% of the country's total trekkers) visited the ACAP). The highest number of tourists visited in September/October (29,218) and March/April (26,282) (DNPWC, 2020). This figure is higher than the total population of the ACAP Region, which is known for its 54 diverse ecosystems and multi-cultural ethnic groups, making it a major natural, cultural, and religious attraction.

In FY 2019/20, Gandaki Province allocated NPR 545,500,000 (36.32% of its total budget of NPR 1,501,900,000) for the implementation of 143 tourism-related projects. The federal and provincial governments jointly funded six major projects, including the Great Annapurna trekking route, subsidies for community homestays, tourism information centers, health checkup points, and several road development initiatives.

At the municipal level, the Annapurna Rural Municipality (ARM) allocated NPR 17,850,000 (9.65% of its total budget of NPR 179,000,000) to implement nine municipal-level projects and eleven ward-level projects across its 11 wards. Furthermore, ACAP allocated NPR 733,300 for 36 conservation projects, which include upgrading 14 check posts, managing 127 signboards, and addressing waste management. These efforts demonstrate the region's focus on both tourism development and conservation.

Multiple benefits analysis

This section deals economic, social, cultural, environmental, educational and health benefits of ecotourism (REST, 2003). The *economic benefits* of ecotourism in the ACAP region are evident through significant investments made by local entrepreneurs, ranging from 75,000 to 47,500,000 NPR, which have generated 692 self-employment opportunities and 352 additional jobs. In peak seasons, daily sales range from 10,000 to 100,000 NPR. The total earnings from the tourism sector amount to 833,940,000 NPR, with an average annual income of 3,563,846 NPR. The primary sources of family income include tourism (900,000 to 15,000,000 NPR), agriculture (35,000 to 846,000 NPR), retail (800,000 to 1,200,000 NPR), porter wages (75,000 to 150,000 NPR), animal transportation (100,000 to 2,340,000 NPR), government and private sector jobs (180,000 to 360,000 NPR), hospitality (240,000 to 480,000 NPR), remittances (350,000 to 4,800,000 NPR), trekking/nature guiding (150,000 to 600,000 NPR), and tour and travel companies (600,000 to 1,200,000 NPR). These diverse income sources highlight the economic impact of ecotourism on the region's local economy.

In terms of *social benefits*, a significant portion of respondents, 165 (67.9%) males and 78 (32.1%) females, are actively contributing as change agents in their communities. Additionally, the majority of respondents, 177 (75.64%), have family members engaged in consumer committees and community-based organizations. A notable 210 (86.4%) respondents run their businesses from their own homes, while the remaining 33 (13.6%) operate in rented buildings. This trend highlights the growing entrepreneurship within the community, driven by strong relationships between local residents and migrants. To further enhance social benefits, most respondents (95.1%) recommend involving youth in indirect tourism services, with 94.7% advocating for support for homestay businesses.

In the case of *cultural benefits*, the ACAP region is home to 11 different religious groups, with 84.2% identifying as Matwali (including Bishowkarma, Garbuja, Gauchan, Gurung, Lalchan, Lama, Paija, Pun, Rai, Rasaili, Sherpa, Thakali, Shrestha, Sunar, Tamang, Thapa, Magar) and the remaining 19.8% as Tagadhari (including Acharya, Adhikari, Baral, Bhandari, Bhattarain, Bista, Chapagain, Devokata, Ghartee, Chhetri, Guragain, Kafle, Karki, Khadka, Khatri, Kunwar, Lohani, Pokhrel, Poudel, Puri, Sharma, Sing, and Subedi). The Gurung and Magar communities are the dominant groups, known for their distinct cultural practices and traditions. All ethnic groups in the region collaborate in managing cultural institutions, organizing festivals, and maintaining social unity. Respondents report spending between 25,000 to125,000 NPR on festival celebrations and 35,000 to 120,000 NPR on cultural attire and ornaments. Similar to the findings of Pasa (2020a), the indigenous groups such as the Tharu, Bote, and Mushar in Amaltari village are recognized for their natural hospitality and involvement in tourism, with cultural performances strengthening community bonds and fostering social cohesion.

Regarding *environmental benefits*, respondents are actively involved in waste management initiatives, participating in committees to handle both indecomposable (average 19.03 kg) and decomposable garbage (ranging from 4 kg to 60 kg). The majority of respondents, 167 (69.13%), recycle decomposable waste into animal fodder and compost, while the remaining respondents provide it to pig farmers. Additionally, 198 (81.48%) respondents produce and supply local organic products to tourists. ACAP has been implementing environmental awareness programs at the local level to promote sustainability. Similarly, Pasa (2020b) found that communities around the Amaltari Buffer zone Community Homestay has increased environmental consciousness, a result of the sustainable community initiatives funded by conservation programs.

In the case of *educational benefits*, 116 (47.7%) of respondents' children are enrolled in private schools, 40 (16.5%) in government schools, and 14 (5.8%) are studying abroad. A significant number of respondents, 194 (79.83%), are investing between 10,000 to 1,420,000 NPR in their children's education. Additionally, all respondents report spending between 50,000 to 600,000 NPR on travel, which has enhanced their personal capabilities and sense of responsibility. Pasa and Adhikari (2019) also found that respondents with informal education tend to be more aware than those with formal education, and they actively engage in tourism by offering locally grown agricultural products, dairy, ethnic foods, and traditional costumes around the Sundarijal and Mulkhark settlements in the Shivapuri Nagarjun National Park. Furthermore, 134 females and 264 males have participated in various vocational training programs, including those in agriculture, CIT, culinary arts, hospitality, and language, improving their skill sets for the tourism industry.

In terms of *health benefits*, the annual household expenditure of respondents ranges from 558,900 to 19,812,600 NPR, primarily spent on food, including vegetables, eggs, meat, fish, dairy, grains, lentils, beverages, fruits, oils, and spices. This improved financial capacity has enabled respondents to purchase nutritious food, helping combat poverty, hunger, and malnutrition. However, health challenges remain, as 67 (27.57%) respondents' family members suffered from spring fever, and 42 (17.28%) faced chronic diseases. Due to inadequate local healthcare services, many respondents are forced to visit hospitals in Pokhara, Chitwan, and Kathmandu, incurring treatment costs between 2,500 and 250,000 NPR. Bhattarai and Pasa (2021) argue that although the 'Local Governance Operating Act-2017' aims to decentralize service delivery in Nepal, the insufficient manpower at the local level is hindering the quality of healthcare services.

Measurement of association

We used multiple regression models (MRM) for describing the association between social demographic and multiple benefit indexes and the predicted variables.

Model I. This model establishes the association between dependent variable Social Demography Index (SDI) and nine predicted variables related to characteristics of the tourism entrepreneurs. The SDI is calculated by component analysis method for composite index (function f from $Rn \rightarrow R$ corresponding to n-number of component variables) (Sava, 2016). The dependent variable SDI (min 1.77, max 4.54, mean 3.18, SD 0.51, SE 0.03) with respect to nine independent variables are considered (Table 2). For the binary variables, two codes 0 (means non-existence) and 1 (means existence) are used. The R-square value found 0.71>0.8 that means the independent variables describe the dependent variable SDI by 71 percent. The Durbin-Watson value found 0.19 thus there is no issue of autocorrelation. The F-value found significant (1.99>0.00) with 16 degree of freedom that means the sample is random and model can be explained.

Table 2: Coefficients for Dependent Variable SDI

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	SE	Beta			Tolerane	VIF
1	(Constant)	6.44	1.62		3.96	.00		
	Destination area	-.11	.35	-.09	-.31	.76	.42	2.36
	Age	-.03	.02	-.49	-1.4	.20	.31	3.13
	Gender	-.03	.33	-.02	-.09	.92	.52	1.90
	Caste/ethnicity	.34	.37	.31	.92	.03	.35	2.79
	Having all households accessories	-.22	.33	-.21	-.67	.52	.41	2.40
	Having personal transportation	-.46	.28	-.42	-1.6	.14	.62	1.61
	Paddy filed area	.05	.00	.27	.69	.50	.26	3.81
	Farming land area	.04	.00	.39	1.21	.02	.37	2.67
	Family food sufficiency	.06	.234	.00	.02	.03	.45	2.20

Table 2 shows the analysis reveals that caste/ethnicity, farming land area, and family food sufficiency significantly impact the dependent variable (SDI), while variables such as destination area, age, gender, household accessories, and personal transportation do not show significant relationships. This suggests that socio-economic factors like farming land area and food sufficiency are key contributors to the dependent variable. The model appears robust, with no issues of multicollinearity, ensuring reliable results.

Model II. This model establishes the relationships between dependent variable Knowledge, Attitude and Practice Index (KAPI) and multiple benefits. The KAPI is calculated by computing KAP items. MRM for the dependent variable KAPI with respect to 6 independent variables has been considered (Table 3). The R-square value found 0.33>0.8 that means the independent variables describe the dependent variable SDI by 33 percent. The Durbin-Watson value found 1.79 thus there is no issue of autocorrelation. The F-value found significant (19.85>0.00) with 242 degree of freedom that means the sample is random and model can be explained

Table 3: Coefficients for Dependent Variable KAPI

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	SE	Beta			Tolerance	VIF
1	(Constant)	-13.24	8.21		-1.61	.10		
	Economic benefit index	-.17	.11	-.09	-1.62	.10	.81	1.22
	Social benefit index	.29	.19	.43	1.60	.01	.03	26.27
	Cultural benefit index	.11	.08	.11	1.40	.01	.43	2.31
	Environmental benefit index	.02	.15	.03	.136	.08	.04	22.42
	Educational benefit index	.04	.02	.08	1.47	.14	.96	1.03
	Health benefit index	.17	.31	.03	.53	.59	.75	1.33

The regression analysis shows that social benefit index and cultural benefit index are the only statistically significant predictors of the dependent variable, both with p-values of 0.01, indicating that higher social and cultural benefits lead to higher outcomes. In contrast, the economic, environmental, educational, and health benefit indices do not significantly impact the dependent variable, despite some having positive coefficients. The absence of multicollinearity, as indicated by the tolerance and VIF values, ensures the reliability of the results. These findings suggest that community-based ecotourism initiatives focusing on social and cultural benefits are likely to have the most significant impact. Further research could explore these factors further or investigate additional variables.

Conclusion

This study concludes that community-based ecotourism in Annapurna Rural Municipality of the ACAP Region is significantly enhancing the livelihoods of local communities by stimulating the rural economy and improving tourism infrastructure. Ecotourism is creating both self-employment and employment opportunities for entrepreneurs, as well as benefiting local residents, including women and youth. The sector provides diverse benefits—economic, social, cultural, environmental, educational, and health—while promoting sustainable practices such as forest conservation, wildlife protection, and organic farming. The tourism sectoral budgets allocated by federal agencies are effectively supporting these initiatives, and the ACAP fund's targeted investments in conservation, community development, and infrastructure are empowering local communities and contributing to rural development. Collaborative efforts among local stakeholders, along with capacity-building initiatives in hospitality, organic farming, and waste management, are key to sustaining and expanding these benefits. Ultimately,

strengthened cooperation between government agencies and ACAP will enhance the positive impact of ecotourism, fostering continued growth and well-being for local people in the Annapurna Rural Municipality.

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