International Journal of Commerce and Management Research
ISSN: 2455-1627, Impact Factor: RJIF 5.22
www.managejournal.com
Volume 2; Issue 6; June 2016; Page No. 26-30

Impact of positive destruction on socio-economic structure of villagers living along the trekking route of high Himalaya (A case study of Chame VDC, Manang, Nepal)

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Abstract
This case study was mainly focused on analysis of impact of road construction on socio-economic structure of villagers living along the trekking route of high Himalayan region of Nepal. Data collected from 140 households comprising different economic categories at Chame Village Development Committee were processed through two way ANOVA test (using Xl-stat software) and three point Likert scale in order to test hypotheses and to quantify the opinion, perception and thought of respondents. Government strategy of eradicating poverty through road construction in tourism village has become failed as overall income of VDC after road construction was declined by 12.44%. Traditional means of transportation have been fully replaced by modern means of transportation. Even though the majority of determinants of socio-economic structure remained unchanged, there was negative change in number of visitors, payments, duration of stay, frequency of natural calamities, prostitution and village security and some positive changes were found in the area of education quality, knowledge related to information technology, health status, and performance of conservation projects and committee.

Keywords: Conservation Area, Tourism, Trekking Route, Bio-diversity, Sources of Income

1. Introduction

Nepal is a small landlocked country having 26.5 million populations which includes 125 ethnic groups, 123 different languages and more than 10 religion categories. This diversified composition of small population within small political boundary provides big foundation to prosper tourism industry in Nepal. Today, tourism industry has been developing as a major economic activity in developed, underdeveloped and developing nation. Out of various types of tourism, concept of rural tourism is in major priority sector in developing and underdeveloped nation as it plays vital role in sustainable livelihood of villagers in remote areas. Rural tourism includes unlimited activities which are conducted for income generation and employment creation in the areas dominated by natural bio-diversities, farm land and old human culture and provides opportunities for visitors to participate in the local activities, traditions, life style and sight-seeing.

In this research, researcher is interested in evaluating the impact of road construction on income, tourism business, social status, livelihood, income generation activities, health, education, technology and performance of local authorities and agencies in Himalayan region of Nepal. Construction of infrastructure for development in those areas which are popular for rural tourism can have both positive and negative impact on tourism sector. On the one hand construction of development infrastructure, especially road, supports in increment in the number of visitors, provide easy access to all income levels of people and even sometimes physically unable people to the rural area and on the other hand it reduces the length of stay, force people to leave their business or change their business, and create either positive or negative influences on social status, livelihood, health, education, technology and performance of rural people, local authorities and agencies. Replacement of trekking route by motor able road can increase the level of pollution, environmental degradation and sometimes it changes the existing culture and life style of rural people which can be a cause of destruction of rural tourism at particular area.

Tourism industry is not only option for livelihood in many nuke and corner of the world (Biederman, 2008 [1], Cook, Yale, & Marqua, 2010 [2], and Goeldner & Ritchie, 2006 [3], but also it act as bridge between conservation, development and community benefit (Hawley, 1995) [4]. Hence it is very essential to examine inter-relationship between environment and human activities regularly in those areas where potential of tourism development is high (Inskeep, 1991) [5].

In this article, researcher is going to analyze the impact of road construction on rural tourism (trekking tourism) and livelihood of rural people. Trekking in Annapurna Circuit provides thrilling and scenic experiences to the trekkers due to its rich bio-diversity and uniqueness. Annapurna Conservation Area covering 7,629 sq. Km is a home for wide range of flora and fauna, cultural heritage and diverse natural heritage and takes trekkers through subtropical forest, beautifully terraced paddy field and glacial environment. 250 km long classic Annapurna Circuit includes disputed highest gorge in the world which separates Annapurna (8,091 m) in the East and Dhawlagiri (8,176 m) in the West, and other three more than 8000 m high peaks together with numerous peaks between 6,000 and 7,000 m. Thorung La Pass (5,416 m) is one of the key point of attraction on this route. Completion of road construction activities on this trekking route in year 2008/'09 have created number of noticeable problem on the Annapurna Circuit Trekking experience. This classical anti-clockwise trail connects Annapurna, Manang and Mustang region of central Nepal. Road has reduced the total length of Annapurna Circuit nearly by 50% and now it seems like short hike in the Himalaya. Generally, it takes ten days to reach Thorung La Pass using trekking route but now visitors can reach there only in two days of dusty drive. This newly born industrial path has broken the long dream existed in the heart of loyal Nepalese trekkers since 1970 when the country first opened its door to

outsiders. It has also gradually destroyed the long existence of serene, expansive and raw environment. Hotels, restaurants, coffee houses, porters, craftsmen, guides who have been supporting visitors since long have lost the basis of their livelihood and now they are forced to think of alternative way for their livelihood as this road bypasses many villages existing on the old trekking route. It has also negative impact on entire socio-economic culture of the people living around the trekking route.

Road construction activities of National Planning Commission on both Western and Eastern side of circuit was driven by a strategic plan related to poverty alleviation. Later on Nepal government realized the negative impact of constructed road on trekking tourism. Thus, they have created number of New Annapurna Trekking Trails (NATT) to keep trekkers away from unpleasant and dusty roads and to provide more pleasant and adventurous trekking experience. An extra burden added to government due to construction of road is to think continuously about the strategic plan required to overcome the negative consequences that can be arose within the boundary of protected area.

All the above discussion, fact and opinion clearly show the need of impact assessment of road construction on the socio-economic life of rural villagers. Hence this paper will try to uncover the issues related to socio-economic condition of villagers before and after the construction of industrial path (road).

2. Objectives of the Study

The major objective of this research is to evaluate the impact of road construction on socio-economic condition of rural people of Nepal. Other minor objectives can be itemized as under:

1. To analyze the impact of road construction on income of different category of household.
2. To know the fluctuation in income generated from different sources after road construction.
3. To evaluate the impact of road construction on tourism business, social status of villagers, livelihood, education, health, technology and performance of local authorities and agencies.

3. Significance of the Study

This paper can be of high importance as it reflects the valid impact of road construction on socio-economic status of rural Himalayan people of Nepal. Other importances of this paper are as under:

1. This paper shows whether government got success in poverty reduction after road construction or not. This information supports government to gauge their work performance as per their target.
2. As this paper provides information of change related to tourism business, socio-economic status of villagers, livelihood, education, health, technology and performance of local authorities and agencies due to road construction, it is easier for government to implement new plan and policies to reform socio-economic status of rural people whose livelihood has completely depended on rural tourism.
3. This research paper will provide foundation knowledge for forth coming researcher so that they can do the same study in different way.
4. This study will add new fact in the field of rural tourism.

4. Research Hypotheses and Research Questions

This study is highly focused on the fluctuation in income as consequences of road construction. Hence this research will test the following hypotheses to reach the conclusion.

1. **H_0:** There is no significance difference in average income of the different category of households.
   H_1: There is significance difference in average income of the different category of households.
   (This test is essential to check whether categorization of households as poor or rich is correct or not.)
2. **H_0:** There is no significance difference in average income of the different category of households before and after road construction.
   H_1: There is significance difference in average income of the different category of households before and after road construction.

In this study mixed methodology will be employed which will make us able to test above hypotheses and to analyze the following research questions as well:

1. Is there any impact of road construction on tourism business, livelihood, social status, health, education, technology and performance of local authorities?
2. What is the magnitude and direction of change in tourism business, livelihood, social status, health, education, technology and performance of local authorities after road construction?

5. Research Methodology

This study was conducted in Chame Village Development Committee of Manang District in Nepal. Manang district is one of the seventy five districts in Nepal and is a part of a Gandaki Zone. Manang is one of the remotest and inaccessible valleys located in the northern rain shadow of Annapurna and Trans Himalayan region of Nepal. This district composed of 13 village development committee and covers the area of 2,246 sq. km at a height of 3,519 meter from the sea level. As Manang is rich in bio-diversity, border with Tibet and starting point of major trekking route i.e., towards Throungla, Mustang and Lasha, it is known as the rural tourism hub of Nepal. Out of 13 Village Development Committee in Manang, researcher has selected Chame Village Development Committee as his study area. As per the national census 2011, this village development committee composed of nine wards, 279 households and population of 1,129 (597 male and 532 female). 140 (50% of total) households were randomly selected for interviews, key informant survey and focus group discussion in order to collect primary data and secondary data required for this study were collected from Annapurna Conservation Area Project Manang and Annapurna Conservation Area Project (ACAP), Pokhara-15. To compensate the probable error 15-16 households were randomly selected from each ward. Later on collected data were classified into four major categories i.e., Large Scale Hotelier (LSH), Small Scale Hotelier (SSH), Rich Non-hotelier (RNH) and Poor Non-hotelier (PNH). In this study change in income level of different categories of households after road constructions have analyzed through two ways ANOVA – test and for this purpose statistical software Xl-stat was used. Other analysis such as change and impact of road construction on tourism business, social status, livelihood, health, technology, education and performance of local authorities and agencies

were fully based on feeling, opinion and perception of respondents. For this or to collect data related to impact, change and magnitude of change three point Likert Scale with various Likert items were used. Increase – 1, Constant – 2, and Decrease – 3 were three points used to analyze impact and Positive-1, Same – 2, and Negative-3 were another three points used to analyze the magnitude and direction of change brought about by the construction of road.

6. Data Analysis and Presentation

In this study collected data were analyzed through several different angles in order to understand the impact of road construction on socio-economic aspect of villagers living along the trekking route of Nepal.

Table 1: Source Wise Average Annual Income of Different Category of People

S. N.	User Category	Farm Source		Non-farm Source		Off-farm Source		Tourism Source		Total	
		Before Road	After Road	Before Road	After Road	Before Road	After Road	Before Road	After Road	Before Road	After Road
1	LSH	43847	73214	321750	415250	10000	15000	650870	306042	1026467	809506
2	SSH	62916	56667	87200	105533	40000	48333	88571	91190	278687	301723
3	RNH	61227	57205	187250	214533	34167	41667	50000	27250	332644	340655
4	PNH	21304	27217	147500	96000	13000	25333	54000	40000	235804	188550
	Total	189294	214303	743700	831316	97167	130333	843441	464482	1873602	1640434

Table-1 above shows the annual earnings of different categories of households before and after road construction. It also reveals different sources which generate income for different categories of households. Income of Large Scale Hotelier (LSH) from tourism source, income of Small Scale Hotelier (SSH) from farm source, income of Rich Non-Hotelier (RNH) from farm source and tourism source and income of Poor Non-Hotelier from non-farm and tourism sources have decreased after road construction. Negative impact of road construction on income of Chame Village Development Committee (VDC) results in reduction in overall income of VDC by 12.44%.

Table 2: ANOVA Table for Hypotheses Test

Source	DF	Sum of squares	Mean squares	$F_{Calculated}$	$F_{Tabulated}$
Categories	3	626984116611.0000	208994705537.0000	34.54	9.28
Type of Road	1	6795914528.0000	6795914528.0000	1.12	10.13
Categories* Type of Road	3	18154010199.0001	6051336733.0000		

Statistical analysis in Table-2 clearly reveals that $F_{Calculated}$ for different categories of households is greater than $F_{Tabulated}$ and this directs us towards the rejection null hypothesis. It means there is significant difference in average annual of different categories of households. This verifies that the researcher's assumption of rich and poor households on the ground of their average income is correct. This also verifies that the wealth distribution among the household in Chame VDC is not equal. Likewise, in case of type of road $F_{Calculated}$ is less than $F_{Tabulated}$ which shows that the average annual income of different categories of households before and after road construction is same. Replacement of trekking route through concrete road does not have any impact on earnings of people living in Chame VDC of Manang, Nepal. This verifies that the Nepal government strategy of eradicating poverty through construction of road in tourism village is not succeeded.

Table 3: Impact and Change in Tourism Business due to Road Construction

S. N.	Determinant of Tourism	Impact on Determinants (% of Respondents)				Direction of Change (% of Respondents)			
		I-1	C-2	D-3	Average	P-1	S-2	N-3	Average
1	No. of External Pilgrim	85	5	10	1.25/I	24	38	38	2.14/S
2	No. of Internal Pilgrim	76	7	17	1.41/I	32	35	33	2.01/S
3	No. of Tourists	47	1	52	2.05/C	5	31	64	2.59/N
4	No. of Tourists Guides	3	24	73	2.7/D	2	47	51	2.49/S
5	Average Payment	6	7	87	2.81/D	4.5	38.5	57	2.53/N
6	Length of Stay	5	6	89	2.84/D	3	30	67	2.64/N

Table-3 demonstrates the impact of road construction on tourism business of Chame VDC. Analysis revealed that even though there was increase in the number of internal and external pilgrim, total number of tourist remained constant. After road construction there was decrease in the number of tourist guide, average payment and visitors' length of stay. According to respondents' opinion none of the determinants of tourism business are positively influenced due to road construction. There is not any impact of road construction on number of pilgrim and number of tourist whereas direction of change in number of tourist, average payment and length of stay is negative.

Table 4: Impact and Change in Social Status due to Road Construction

S. N.	Determinants of Social Status	Impact on Determinants (% of Respondents)				Direction of Change (% of Respondents)			
		I-1	C-2	D-3	Average	P-1	S-2	N-3	Average
1	Natural Calamities	58	32	10	1.52/C	6	34	60	2.54/N
2	Alcoholism	46	23	31	1.85/C	25	30	45	2.2/S
3	Domestic Violence	42	57	1	1.59/C	3.5	55.5	41	2.38/S
4	Prostitution	85	7	8	1.23/I	5	10	85	2.8/N
5	In-Migration	50	39	11	1.61/C	5.5	65.5	29	2.24/S
6	Out-Migration	39	51	10	1.71/C	18	62	20	2.02/S
7	People's Networking	78	13	9	1.31/I	50.5	39	10.5	1.6/S
8	Harmony Among People	6	91	3	1.97/C	6	92	2	1.96/s
9	House Construction	35	54	11	1.76/C	13.5	73	13.5	2/S
10	Village Security	41	6.5	52.5	2.12/C	6.5	12	81.5	2.75/N

Table-4 measures the impact of road construction on social status of villagers of Chame VDC. Analysis shows increment in prostitution and people's networking after road construction. Impact of road construction on other determinants of social status such as natural calamities, alcoholism, domestic violence, in and out migration, harmony among the people, house construction, and village security remain same as before. People of Chame VDC have analyzed negative change in natural calamities, prostitution and village security. Situation of other determinants of social status are as same as before.

Table 5: Impact and Change in Livelihood and Income Generation Activities due to Road Construction

S. N.	Determinants of Livelihood and Income Generation	Impact on Determinants (% of Respondents)				Direction of Change (% of Respondents)			
		I-1	C-2	D-3	Average	P-1	S-2	N-3	Average
1	Sources of Income	19	28	53	2.34/C	13	28	59	2.46/S
2	Forest Dependency	10	69	21	2.11/C	10	77	13	2.03/S
3	Job-shifting Rate	8	83	9	2.01/C	9	90	1	1.92/S
4	Farming Practices	6	79	15	2.09/C	6	89	5	1.99/S
5	No. of Livestock	17	42	41	2.24/C	6	42	52	2.46/S
6	Rate of Remittances	15	39	46	2.31/C	15	45	40	2.25/S

Table-5 exhibits the interesting fact regarding impact of road constructions on livelihood and income generation activities of villagers of Chame VDC, Manang, Nepal. It is revealed that income sources of villagers, their dependency on forest product, job shifting rate among the villagers, farming practices, number of livestock that they are holding, and rate of remittances inflow are not influenced by road construction and there are not any changes in these determinants as per the opinion of respondents.

Table 6: Impact and Change in Health, Education and Technology due to Road Construction

S. N.	Determinants	Impact on Determinants (% of Respondents)				Direction of Change (% of Respondents)			
		I-1	C-2	D-3	Average	P-1	S-2	N-3	Average
1	Education Quality	82	3	15	1.33/I	87	3	10	1.23/P
2	Status of IT	91	5	4	1.13/I	92	6	2	1.1/P
3	Health Facilities	89	2	9	1.2/I	52	8	40	1.88/S
4	Health Status	50	4	46	1.96/C	95	2	3	1.08/P

Quality of education, knowledge of people related to information technology, health facilities have increased after road construction (Table-6). But increment in health facilities does not have impact on health status of villagers and it may be the cause of lack of health related awareness. If we analyses the change then it reveals that quality of education, knowledge related to information technology, health status are positively changed while change in health facilities is constant.

Table 7: Impact and Change in Performance of Local Authorities and Agencies due to Road Construction

S. N.	Determinants of Performance	Impact on Determinants (% of Respondents)				Direction of Change (% of Respondents)			
		I-1	C-2	D-3	Average	P-1	S-2	N-3	Average
1	Performance of VDC	25	73	3	1.8/C	23	72	5	1.82/S
2	Performance of ACAP	52	35	13	1.61/C	60	32	8	1.48/P
3	Performance of CAMC	54	31	15	1.61/C	61	34	5	1.44/P
4	Role of Traditional Judge	40	41	19	1.79/C	49	44	7	1.58/S
5	Role of Political Leader	35	55	10	1.75/C	42	57	1	1.59/S

Statistics presented in Table-7 clearly reflects the zero impact of road construction on performance of Village Development Committee (VDC), Conservation Project, Conservation Management Committee, Traditional Judge, and Political Leaders. Villagers believes that there is positive change in the performance of ACAP (Annapurna Conservation Area Project)

and CAMC (Conservation Area Management Committee) but performance of VDC, traditional judge and political leader remains constant as before road construction.

7. Summary, Conclusion and Recommendation:

Government strategy of eradicating poverty through road construction in tourism village has become failed as total income of VDC after road construction was decreased by 12.44%. There was small amount of increment in the average income of small scale hotelier and rich non-hotelier but dramatic decline in the average annual income of larger scale hotelier and poor non-hotelier. Traditional means of transportation such as mules, horses, sheep, and porters have been fully replaced by modern means of transportation. Apart from some determinants of livelihood most of the determinants remains constants. As per the opinion of respondents there is negative change in number of tourists, average payments, length of stay, situations of natural calamities, prostitution and village security. Similarly, quality of education, knowledge on information technology, health status, and performance of Annapurna Conservation Area Project and Conservation Area Management Committee are positively influenced due to road construction. Besides these, all other determinants of livelihood and income generation remains same even after the construction of road. Not only there was decrease in total income but also lot of households along the trekking route loses their job. Therefore, government should implement alternative income generating activities so that these people who lost their job can survive in the same community and society.

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