

## Telecentre, Tourism and Their Impacts on Bario, Malaysia

May-Chiun Lo, Sharon Cheuk and Azuriaty Atang

Faculty of Economics and Business,  
Universiti Malaysia Sarawak, 94300 Sarawak, Malaysia

---

**Abstract:** It is undeniable that ICTs play an important role in alleviating poverty as it has the capacity to generate more income for the local communities and subsequently increase their standard of living. Past researchers have evidenced that ICTs, in the form of telecasters, have contributed to tourism development in rural destinations. In our study, we examine the impact of the telecaster on tourism, as well as tourism's impact on the community in a rural destination from the economic, socio-cultural and environmental perspective. We also examine the community's attitude towards tourism seasonality and future tourism development policies. 231 respondents comprising of residents of a rural tourism destination in Sarawak, Malaysia took part voluntarily in this study. To assess the developed model, *SmartPLS 2.0 (M3)* was applied based on path modelling and then bootstrapping with 200 re-samples was applied to generate the standard error of the estimate and t-values. The findings suggested that the telecaster has had a positive impact on the tourism development in Bario, which subsequently yielded positive economic, social and environmental impacts to the said destination. It was also noted that residents preferred that tourism season ability be reduced and more tourism development be implemented, in Bario. Implications of these findings were further discussed.

**Key words:** We also examine the community's attitude towards tourism seasonality and future tourism development policies

---

### INTRODUCTION

It is a well-documented fact that ICT plays an important role in to ease poverty in rural communities (e.g. [1-3]). In particular, the role of the telecaster in tourism development, in rural destinations, has been noted. For example, [4] proposed a concept of e-commerce, using a telecaster, to promote community-based tourism. Likewise, [5] conducted an investigation into the contribution of ICT to the development of eco-cultural practices in Central Kazakhstan by carrying out semi-structured interviews with different stakeholders involved with community-based tourism. [6] Investigated the impact of a telecaster on tourism at a rural telecaster from the community's perspective, using quantitative methods.

The above research indicates a link between the telecaster/ICT and tourism development, but the impact of the said development has to be visible and experienced, particularly by the community in the destination involved. Hence, this study will sequentially examine and

quantitatively measure the role of the telecaster in tourism development, the latter's impact on the community and destination from the economic, social and environmental perspective. This study will also attempt to examine the community's attitude towards tourism seasonality and future tourism development policies.

To assess the developed model, *SmartPLS 2.0 (M3)* was applied based on path modelling and then bootstrapping with 200 re-samples was applied to generate the standard error of the estimate and t-values. Partial Least Squares (PLS) path modelling was used as it is a robust Structured Equation Modelling technique which is flexible in handling.

### Literature Review

**Telecasters at Rural Areas:** The information (or digital) age came into its own with the invention of the World Wide Web (WWW) in 1989 and shortly after, the internet transformed into a global network. Today the internet is widely recognized as a global platform for accelerating the flow of information. Because of the internet, people are

more intellectually engaged than ever before [7]. However, the internet as a resource is not equally available to (and exploited by) all. Digital divides - *gaps between individuals, households, businesses and geographical areas with regard to their opportunities to access ICTs and the use of the internet* [8] - do exist. In other words, different groups of people will have different levels of access towards and abilities in using the internet. These divides have been researched into and classified differently, for example, social digital divide (involving gender, age, race/ethnics) [9-11], economic divide [12-14] and education divide [15, 16] saw the digital divide in three stages: economic, usability and empowerment. The first stage, economic, simply refers to the different levels of ability to afford ICT and internet. Usability refers to the different levels of ability to use ICT and internet, due to literacy and educational issues. The last stage, empowerment, refers to the different levels of participation in (and exploitation of) ICT and internet, due to initiative and skill - a knowledge gap, so to speak. The Nielsen classification is a good way to view the rural/urban digital divide. Rural areas are physically remote and potential users in such areas would experience the short end of the divide at all three stages. Firstly, the implementation of ICT networks and services is challenged due to problems in equipment installation, lack of power supply, lack of initial capital funds, operation and maintenance, affordable coverage, lack of technical support and computer repair facilities and multiple players in ICT design and implementation [17-19]. This impedes internet accessibility. As a result, people in rural areas generally suffer a lack of ICT (and general) education, leading to lack of empowerment in ICT and the internet arena.

To bridge this rural/urban digital divide, telecasters (sometimes known as “community information centres”) have been proposed and implemented. These are centres that are set up for the general use of the community - for accessing the internet and the use of e-applications and other ICT-related services. The role of telecasters have been identified as, *inter alia*, a provider of applications for citizen services and government interactions, a virtual site for the community to meet and interact, a provider of trade, commercial and government-related information, a general information centre, a communications portal and facilities centre and a platform for knowledge sharing [20-23].

Apart from that, the telecaster plays a significant role in reshaping the communication of rural communities in their daily lives [24]. However, the level of ICT adoption in the rural areas due to their geographical location and

lack of infrastructure may affect the communication channel between rural communities with the outside world [25]. Research has shown that businesses located in rural areas tend to have a low ICT adoption as compared to the urban areas [24].

**Telecasters and Tourism at Rural Destinations:** It is undeniable that the telecaster plays an important role in developing the tourism industry, as it aids in widening the market by promoting rural destinations to people worldwide. Based on research conducted by [26], the existence of an internet connection provides an avenue for tourists to search for places of interest, accommodation and also the transportation available for the travel pertaining to their desired destinations.

Besides, rapid tourism development requires refined information technologies to help the tourism operator manage all bookings as well as the tourists’ need for relevant and updated information [27-29]. With the adoption of information technologies in the tourism industry, the internet has provided more ways for tourists and the tourism operator to communicate across boundaries through emails, chatting, teleconferencing, amongst other things [26].

For rural destinations, the telecaster provides an internet connection to help increase the development of tourism activities. It is believed that telecaster has assisted in increasing the efficiency of home stay or rural accommodation providers in their daily operations, especially in facilitating transactions, acting as a low-cost distribution channel, helping the providers give a more personalised service to tourists and many others [25, 30]. A rural destination can also be reached easily as tourists are able to make personalised bookings for their accommodation and activities at the destination. On the other side of the coin, rural tourism operators are able, via the telecaster, to promote their business and communicate directly with their potential customers [24] and hence avoid intermediary costs [31, 32].

As mentioned earlier, tourism is an industry that is becoming increasingly important to the economy of rural destinations. A rural destination has its own attractiveness, generally derived from its beautiful landscape, cultural monuments and also the culture of its people. Usually, clients for rural tourism are those who seek experiences different from that of typical urban settings, especially nature lovers and adventurer backpackers; some tourists also look for rush-free vacations and a relaxing environment [33] to release stress and work overload [34, 35] Noted that one of the main

reasons people engage in rural tourism is an encouraging prior experience with a rural destination. It is also believed that rural destination tourists are motivated to travel to rural areas because of their curiosity to learn about other cultures, to have the opportunity to participate in outdoor activities and to experience the natural environment [36].

**The Impact of Tourism on Rural Destination:** Tourism activities in rural areas are believed to have increased the economic wealth of the rural communities involved. Rural communities can gain more income by seeking alternative ways to stimulate their income and one of the ways is by getting involved in tourism activities such as home stay and jungle trekking [37]. Apart from that, tourism enables rural communities to promote local products such as handicraft and farm products. This indirectly helps to improve the quality of life for the people in rural areas as it opens up other avenues for development, such as better clinics, schools, airport and hospitals for the community [38, 39], which subsequently help to add tourist numbers and indirectly increase the income and tax revenues to the hosting region [40].

However, despite the perceived role of tourism as a tool for economic development, tourism studies have also shown its downside impact on economics [41]. The increase in the price of goods at the tourist destination might/would affect the local population. According to [42], the increased number of visiting tourists does not always mean more income earned by the hosting region. The type of tourist also plays an important role. For example, backpackers are normally known for their budget travel, which means that this type of tourist will possibly spend as little as they can at the destination they travel to. Apart from that, there are studies that show that tourism has no impact at all towards the economic value of the region [43].

From the socio-cultural perspective, the impact of tourism on a destination may differ from one place to another. According to [41] it is believed that when tourism reaches the growth stage, the communities involved would suffer from traffic congestion problems as well as crowdedness in public areas. This is especially during high peak seasons such as school holidays and festive seasons. Apart from that, the negative impact of tourism also leads to social problems such as gambling, deterioration of traditional culture and drug abuse, especially among the younger generation [41, 44- 46].

However, studies have also shown the positive impacts of tourism on socio-cultural elements of the destination. It has led to the restoration of old

customs and traditions among the local community as they exhibit the same to tourists; this encourages the younger generation to cultivate their own traditions [47].

In terms of the environment, tourism has brought about greater awareness of the importance of natural environment preservation, especially among the local community [46], but without proper tourism management, the environment would still face threats of pollution. According to [48], tourism activities are believed to be responsible for the abuse of natural resources; they also contribute to air pollution when tourists are mobilised from one destination to another [49].

Tourism also has an impact on the seasonality in a destination. Seasonality can be defined as the temporary imbalance of tourism activities [50], possibly caused by a natural climate change (winter, summer, autumn), festive season or religious festival (Christmas, Chinese New year, Eid Mubarak) as well as school holidays. These factors can be beyond the control of decision makers and partially under control such as a planned festival, school holidays and Visit Malaysia Year 2014. Results from the temporary imbalance can be an increase or decrease in the number of tourist arrivals, the crowdedness of the destination as well as the expenditure of the tourist itself [50]. It is believed that seasonality caused the changes in demand for certain destinations - for example, most Westerners travel to Asian countries during the winter season, to avoid the cold weather [51]. In other words, the tourism industry in most Western countries would be adversely affected during the winter season while it would be the high season for Asian countries, although it is possible for the seasonality of tourism demand to change slowly according to the life cycle of the destination in question [52].

Seasonality also has an economic impact on tourism operators such as restaurants, airlines, lodge owners and home stays [50]. During peak seasons, tourists and local residents alike suffer from higher goods prices; a higher turnover rate in the tourism services is observed because jobs are mostly offered during the peak season and local residents would suffer from unemployment during the off season. In terms of social impact, seasonality can be a source of stress on public utilities such as water supply, waste management and traffic [53], causing dissatisfaction and adverse impacts to the quality of life among the local community. In contrast, low seasons can offer breaks from tourist presence to local residents living in and around a famous tourism site.

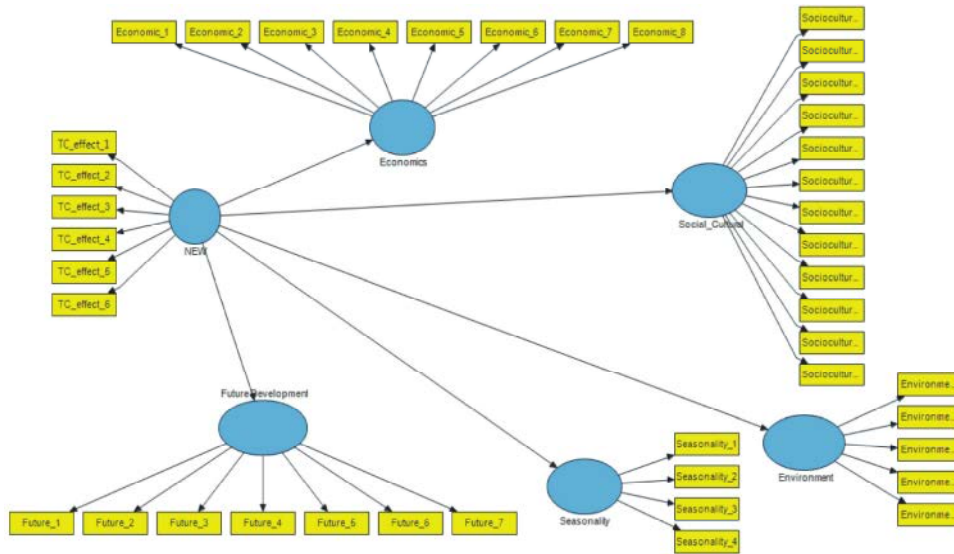


Fig. 1: Research Model

In view of the foregoing, future development of tourism in a rural destination need to take into consideration all factors which impact tourism activities, so that it can be sustainable. One of the popular issues in tourism development is the changing use of land in the tourism site [54]. Land is a production factor, for agricultural usage and as a natural resource, for the use of the local people. However, with the rapid tourism development, land may be used to build tourism facilities. Hence, policy makers need to implement policies to protect nature resources and limit development to ensure sustainability at the tourism sites. Besides that, the issue of waste management, water resources and distribution also need to be taken into consideration. Water supply becomes scarce during peak seasons and therefore, policy makers of the tourism site must ensure that adequate facilities serving the water, health and hygiene needs of local communities are in place prior to tourism development to serve the needs of both locals and tourists [55].

### MATERIALS AND METHODS

The population of the present study consists of local communities currently residing in a rural tourism destination in Sarawak, Malaysia. A total of 250 questionnaires were distributed to the local communities and only 231 questionnaires were used for analysis. As some respondents at the destination were more proficient in the Malay language as compared to English, the questionnaire included a Malay translation.

To assess the model developed (Figure 1) the study used the *SmartPLS 2.0 (M3)* which is based on path modelling and then the bootstrapping [56-58] with 200 re-samples were used to generate the standard error of the estimate and t-values.

### RESULTS

**Assessment of the Measurement Model:** Firstly, confirmatory factor analysis (CFA) was conducted to test the reliability, convergent validity and discriminate validity of the scales. As indicated in the Table 1 and 2, most item loadings were larger than 0.5 (significant at  $p < 0.01$ ). As shown in Table 2, all Average Variance Extracted (AVEs) exceeded 0.5 [59]. The composite Reliability (CRs) for all the variables exceeded 0.7 [60] while the Cronbach alpha values were either close to or exceeded 0.7 [61]. It was noted that all the indicators loaded much higher on their hypothesized factor than on other factors (own loading are higher than cross loadings [56, 62], hence convergent validity is confirmed. In addition, as indicated in Table 4, the square root of the AVE was tested against the intercorrelations of the construct with the other constructs in the model to ensure discriminate validity [56, 62, 63] and all the square root of the AVE exceeded the correlations with other variables. Thus, the measurement model was considered satisfactory with the evidence of adequate reliability, convergent validity and discriminate validity.

Table 1: Loading and Cross Loading

	New	Economics	Social Cultural	Environment	Seasonality	Future Development
TC_effect_1	0.802	0.455	0.541	0.508	-0.424	0.534
TC_effect_2	0.878	0.513	0.511	0.525	-0.403	0.595
TC_effect_3	0.860	0.422	0.470	0.418	-0.326	0.614
TC_effect_4	0.714	0.444	0.343	0.333	-0.326	0.516
TC_effect_5	0.728	0.347	0.368	0.427	-0.285	0.493
Economic_1	0.478	0.799	0.406	0.365	-0.249	0.451
Economic_2	0.285	0.714	0.245	0.259	-0.172	0.261
Economic_4	0.423	0.751	0.353	0.327	-0.315	0.407
Economic_8	0.357	0.612	0.476	0.404	-0.395	0.417
Sociocultural_6	0.501	0.485	0.818	0.507	-0.364	0.533
Sociocultural_7	0.527	0.426	0.849	0.526	-0.351	0.544
Sociocultural_8	0.389	0.381	0.792	0.429	-0.317	0.368
Sociocultural_9	0.336	0.293	0.638	0.377	-0.360	0.283
Sociocultural_11	0.390	0.396	0.690	0.343	-0.312	0.370
Sociocultural_12	0.379	0.344	0.717	0.410	-0.299	0.476
Environment_1	0.541	0.427	0.513	0.901	-0.330	0.473
Environment_5	0.326	0.329	0.419	0.695	-0.198	0.376
Seasonality_3	-0.420	-0.404	-0.410	-0.339	0.893	-0.460
Seasonality_4	-0.349	-0.269	-0.351	-0.245	0.841	-0.351
Future_1	0.555	0.455	0.467	0.539	-0.336	0.787
Future_2	0.633	0.510	0.497	0.542	-0.395	0.877
Future_3	0.606	0.406	0.446	0.441	-0.368	0.849
Future_4	0.562	0.466	0.534	0.379	-0.439	0.808
Future_5	0.317	0.354	0.340	0.208	-0.323	0.593
Future_7	0.392	0.268	0.344	0.193	-0.299	0.604

Note: TC=Telecaster, Future=Future development.

Table 2: Results of Measurement Model

Model Construct	Measurement Item	Loading	CR <sup>a</sup>	AVE <sup>b</sup>
New	TC_effect_1	0.802	0.898	0.639
	TC_effect_2	0.878		
	TC_effect_3	0.860		
	TC_effect_4	0.714		
	TC_effect_5	0.728		
Economics	Economic_1	0.799	0.812	0.521
	Economic_2	0.714		
	Economic_4	0.751		
	Economic_8	0.612		
Social Cultural	Sociocultural_6	0.818	0.887	0.569
	Sociocultural_7	0.849		
	Sociocultural_8	0.792		
	Sociocultural_9	0.638		
	Sociocultural_11	0.690		
	Sociocultural_12	0.717		
Environment	Environment_1	0.901	0.783	0.648
	Environment_5	0.695		
Seasonality	Seasonality_3	0.893	0.859	0.753
	Seasonality_4	0.841		
Future Development	Future_1	0.787	0.890	0.580
	Future_2	0.877		
	Future_3	0.849		
	Future_4	0.808		
	Future_5	0.593		
	Future_7	0.604		

Note: <sup>a</sup> Composite Reliability (CR) = (square of the summation of the factor loadings) / {(square of the summation of the factor loadings) + (square of the summation of the error variances)}

<sup>b</sup> Average Variance Extracted (AVE) = (summation of the square of the factor loadings) / {(summation of the square of the factor loadings) + (summation of the error variances)}

Table 3: Summary Results of the Model Constructs

Model Construct	Measurement Item	Standardized estimate	t-value
New	TC_effect_1	0.802	22.672
	TC_effect_2	0.878	40.473
	TC_effect_3	0.860	22.033
	TC_effect_4	0.714	7.677
	TC_effect_5	0.728	10.626
Economics	Economic_1	0.799	15.786
	Economic_2	0.714	6.691
	Economic_4	0.751	10.450
	Economic_8	0.612	6.215
Social Cultural	Sociocultural_6	0.818	23.121
	Sociocultural_7	0.849	22.948
	Sociocultural_8	0.792	11.218
	Sociocultural_9	0.638	7.622
	Sociocultural_11	0.690	9.109
	Sociocultural_12	0.717	10.532
Environment	Environment_1	0.901	25.004
	Environment_5	0.695	6.450
Seasonality	Seasonality_3	0.893	22.683
	Seasonality_4	0.841	12.755
Future Development	Future_1	0.787	15.939
	Future_2	0.877	37.340
	Future_3	0.849	15.545
	Future_4	0.808	20.989
	Future_5	0.593	7.732
	Future_7	0.604	7.399

Note: TC=Telecaster,

Table 4: Discriminate Validity of Constructs

	New	Economics	Social Cultural	Environment	Seasonality	Future Development
New	0.799					
Economics	0.549	0.722				
Social Cultural	0.567	0.520	0.754			
Environment	0.559	0.473	0.580	0.805		
Seasonality	-0.446	-0.394	-0.441	-0.341	0.867	
Future Development	0.690	0.545	0.581	0.530	-0.472	0.761

Note: Diagonals represent the square root of the average variance extracted while the other entries represent the correlations

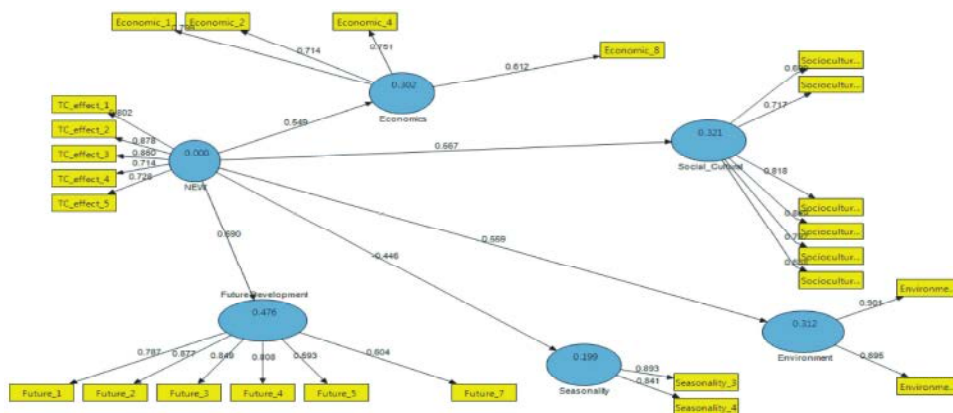


Fig. 2: Results of the Path Analysis

**Assessment of the Structural Model:** Secondly, Table 6 and Figure 2 present the results of the hypotheses testing. It was revealed that “New” was found to be significantly related to the economics, social

cultural, environment, seasonality and future development. The results have revealed that all hypotheses, namely, H1, H2, H3, H4 and H5 were supported.

Table 5: Result of Reliability Test

Model Construct	Measurement Item	Cranach's $\alpha$	Loading range	Number of items
New		0.857	0.714 - 0.878	6(5)
	TC_effect_1			
	TC_effect_2			
	TC_effect_3			
	TC_effect_4			
	TC_effect_5			
Economics		0.692	0.612 - 0.799	8(4)
	Economic_1			
	Economic_2			
	Economic_4 Economic_8			
Social Cultural		0.847	0.638 - 0.849	12(6)
	Sociocultural_6			
	Sociocultural_7			
	Sociocultural_8			
	Sociocultural_9			
	Sociocultural_11 Sociocultural_12			
Environment		0.689	0.695 - 0.901	5(2)
	Environment_1 Environment_5			
Seasonality		0.674	0.841 - 0.893	4(2)
	Seasonality_3 Seasonality_4			
Future Development		0.851	0.593 - 0.877	7(6)
	Future_1			
	Future_2			
	Future_3			
	Future_4			
	Future_5			
	Future_7			

Initial items numbers (final numbers)

Table 6: Path coefficients and Hypothesis Testing

Hypothesis	Relationship	Coefficient	t-value	Supported
H1	Telecaster → Economics	0.549	8.094	YES
H2	Telecaster → Social and Cultural	0.567	8.661	YES
H3	Telecaster → Environment	0.559	7.948	YES
H4	Telecaster → Seasonality	-0.446	4.940	YES
H5	Telecaster → Future Development	0.690	12.606	YES

We also conducted a global fit measure (GoF) assessment for PLS path modelling, which is defined as the geometric mean of the average communality and average  $R^2$  (for endogenous constructs; [57]) following the procedure used by [64]. Following the guidelines of [58], the GoF values were estimated (see formula), which may serve as cut-off values for global validation of PLS models. The GoF value of 0.45 (average  $R^2$  was 0.322, average AVE was 0.618) for the (main effects) model, which exceeds the cut-off value of 0.36 for large effect sizes of  $R^2$ . As such, it allows us to conclude that our model has better explaining power in comparison with the

baseline values ( $GoF_{small}=0.1$ ,  $GoF_{medium}=0.25$ ,  $GoF_{large}=0.36$ ) [64]. It also provides adequate support to globally validate the PLS model [58].

$$GoF = \sqrt{AVE \times R^2}$$

## DISCUSSION

From the findings, we see that the telecaster has had a high and positive impact on tourism in Barrio. In particular, it has had a direct effect on the increase in

tourist arrivals to Bario. Indirectly, through better communication with the outside world, the telecaster had helped to promote Bario as a tourist destination at the international level, especially through tourism websites and social media. The telecaster had also raised Bario's profile at the national level, which attracted development funding from the government. From the practical viewpoint, through better communication with visitors/guests, the telecaster helps lodge owners to logistically prepare for guest arrivals - in terms of room preparations, purchase of food, transportation arrangements and the booking of tour guides for hiking expeditions. Respondents also agree that the telecaster gives tourists a place to access the internet and other ICT services.

The findings also show a high correlation between a positive economic impact on Bario and tourism. In particular, it was noted that tourism has attracted more investment and spending to Bario and has increased the standard of living more rapidly due to the money spent by tourists. It is submitted that money is not only spent to benefit the tourism-related businesses in Bario, such as home stays, tour guides and car rentals; non-tourism related businesses have also benefited, such as agricultural holdings which supply food to the home stays hosting the tourists. Pineapple farms also benefit as the Bario pineapple is much sought-after.

In terms of socio-cultural impact, it was noted that tourism has had a positive and significant one on the community in Bario. In particular, respondents noted that contact with tourists generally resulted in a positive experience. Respondents generally perceived that tourists were interested in learning the culture of Bario and at the same time, they were able to learn more about the tourists' own culture during interaction with them. They also perceived that the culture of Bario was presented to tourists in an authentic way and felt that tourism provides an incentive for the preservation of the local traditions and customs, so that these traditions/customs can serve as unique attractions of the rural destination.

In a similar vein, respondents generally felt that tourism also provides an incentive for the natural environment to be protected, as many tourists travel to Bario specifically to participate in jungle trekking, which can span a few hours to a few days and usually with the presence of a guide, as well as to experience the rural atmosphere.

Tourism is a seasonal business and we noted its seasonality on the residents of Bario. In general, residents were of the opinion that the total tourist numbers should

be increased, but the numbers to remain consistent throughout the year. In other words, they generally preferred more tourists all year round as compared to a greater number during the high season, usually between Julys to August, coupled with a lower number during the off-peak season.

Lastly, we also note the community's attitudes towards future tourism-related development policies in Bario and found that they were generally in agreement with such efforts. In particular, they felt that new programmes to preserve natural resources should be developed. Also, new cultural attractions, such as museums and community hall, should be offered in Bario, as well as specific attractions to increase tourism such as parks and tourist services. Tourism marketing and promotion should be increased and tourism infrastructure such as larger hotels and home stays (with more than 50 beds), as well as more businesses (such as restaurants, shops and other services) should be in place.

In summary, the telecaster had/has a very strong impact on rural tourism development, which in turn has had a positive economic, socio-cultural and environmental impact on the community and destination. In other words, we can conclude that the telecaster's impact is significant from a big-picture perspective.

## **CONCLUSION**

The findings suggest that from the local community's perspective, the telecaster has been a major factor in encouraging tourism development, bringing with it economic and social, cultural and environmental advantages. However, this may not be the case once tourism has reached a critical mass and the negative effects begin to outweigh the good. For instance, Mt Everest as a tourist destination has been complained by climbers to be overcrowded and commercialised; the environmental damage from carbon emissions have been believed, by researchers, to have shrunk the glaciers in the area by 13 percent in the past 50 years and moved the snowline up by more than 500 feet. The implication of this is a significant reduction in the water source that feeds the main rivers in the populous regions of India, which supply drinking water and irrigation [65].

Suggestions for future research would, therefore, include a longitudinal study investigating the same areas of tourism development and its effects on the community/destination, to capture the changing attitudes and effects over time. It is envisaged that such a study would have practical benefit for tourism implementers and



decision-makers, in the sense that tourism activity can be proactively detected and curbed once critical mass is reached.

It can be inferred from the residents' view on seasonality that despite the positive effects arising from tourism, they were nevertheless quite aware of potential problems arising from tourist congestion. Hence, it is recommended that tourism policies be developed to encourage tourist number consistency throughout the year. For example, future development should focus on creating strategies to overcome the differentiation in tourism demand [66, 67]. These strategies could be applied to those private producers such as hotels and food and beverage suppliers through implemented pricing policies which can reduce the effect of higher prices during peak seasons. Apart from that, the government of the tourism site can strategically plan to offer activities during the off season, such as unique local traditional festivals. This would encourage income stability for the local community [51].

In view of the fact that the telecaster has had a positive impact on tourism in the rural destination, it is recommended that its impact can be further maximised to promote tourism. For instance, ICT at the telecaster could be leveraged to promote tourism and tourism-related businesses. Should there be any skill deficiency amongst the community in the creation and placement of the necessary content on the internet, there is an opportunity for the telecaster to conduct ICT training, specifically to business owners, on ways and means to harness ICT to promote and increase business volume. For tourists, the telecaster can offer practical aid such as an energy charging station for phones, laptops and cameras, using its solar power, together with the line of services currently being offered.

The value of this study lies in the investigation of the telecaster's impact on tourism and a further investigation of tourism on the community in a rural destination from the economic, socio-cultural and environmental aspect, which had not been previously studied. Therefore, this paper contributes to the literature on bridging the digital divide amongst rural communities in general and to literature on telecaster use and its multiple impacts.

Despite efforts by the researchers to ensure a rigorous investigative approach and data collection techniques for the purpose of a sound research, the findings of the present research, like those of any empirical investigation, are subject to limitations.

Generalisability can be further improved with a larger sample and sampling at more rural destinations which house telecasters. The use of cross-sectional data methodology focused only on the periods of primary investigation and provided a 'snapshot' of one particular group at one moment in time. Thus, this study is limited in a temporal context.

## REFERENCES

1. Torero, M. and J. von Braun, 2005. Information and Communication Technologies for the Poor. Washington D.C., US: International Food Policy Research Institute. Retrieved from: <http://www.ifpri.org/sites/default/files/pubs/pubs/ib/ib40.pdf>
2. Kelles-Viitanen, A., 2003. The Role of ICT in Poverty Reduction. Helsinki, Finland: EVA. Retrieved from: [http://www.eva.fi/wp-content/uploads/files/397\\_the\\_role\\_of\\_ict.pdf](http://www.eva.fi/wp-content/uploads/files/397_the_role_of_ict.pdf)
3. Flor, A.C., 2001. ICT and Poverty: The Indisputable Link. Paper presented at the Third Asia Development Forum on Regional Economic Cooperation in Asia and the Pacific by the Asian Development, 11-14 June, Bangkok.
4. Davison, R.M., R.H. Harris and D.R. Vogel, 2005. E-Commerce for Community Based Tourism in Developing Countries. In the Proceedings of the 9<sup>th</sup> Pacific Asia Conference on Information Systems (PACIS 2005), pp: 1396-1403.
5. Tiberghien, G.A. and V. Garkavenko, 2013. An Exploratory Study on Contributions of Information and Communication Technologies to the Development of eco-cultural Tourism in Central Kazakhstan. Retrieved from: <http://ertr.tamu.edu/files/2013/02/14.pdf>
6. Lo, M.C., P. Songan, S. Cheuk, A. Atang and A.W. Yeo, 2013. Communities' Attitudes towards Telecentre and Its Impact on Rural Tourism. *International Journal of Innovation, Management and Technology*, 4(6): 534-540.
7. Lallana, E.C. and M.N. Uy, 2003. The Information Age. UNDP-APDIP. Retrieved from: <http://www.apdip.net/publications/iespprimers/epimer-infoage.pdf>.
8. Organisation for Economic Co-operation and Development (OECD), 2001. Understanding the Digital Divide. Paris, France, OECD Publications, pp: 5.

9. Huyer, S. and T. Sikoska, 2003. Overcoming the Gender Digital Divide: Understanding ICTs and their Potential for the Empowerment of Women, Instraw Research Paper Series No. 1. International Research and Training Institute for the Advancement of Women (INSTRAW). Retrieved from [http://www.uninstraw.org/pdf/oth-Synthesis\\_Paper.pdf](http://www.uninstraw.org/pdf/oth-Synthesis_Paper.pdf).
10. Kumar, K.G., 2004. The grey digital divide. The Hindu Business Line. Retrieved from: <http://www.thehindubusinessline.in/2004/06/01/stories/2004060100571900.htm>.
11. Fairlee, R.W., 2004. Race and the Digital Divide. Berkeley Electronic Journals, Contributions to Economic Analysis and Policy, 3(1):15. Retrieved from: <http://people.ucsc.edu/~rfairlie/papers/published/bejournals%202004%20-%20digitaldividedefinal.pdf>
12. Hilbert, M., 2010. When is Cheap, Cheap Enough to Bridge the Digital Divide? Modeling Income Related Structural Challenges of Technology Diffusion in Latin America. World Development, 38(5): 756-770.
13. Norris, P., 2000. The Digital Divide: Civic Engagement, Information Poverty and the Internet Worldwide. New York: Cambridge University Press.
14. Sciadas, G., 2002. The Digital Divide in Canada. Ottawa: Statistics Canada. Retrieved from: <http://www.statcan.ca/english/research/56F0009XIE/56F0009XIE2002001.pdf>.
15. Rooney, J., 2011. Education, Race and the Internet: Digital Divide or Racial Ravine? Edudemic, October. Retrieved from: <http://edudemic.com/2011/10/digital-divide/>.
16. Nielsen, J., 2006. Digital Divide: The Three Stages, Alertbox, November. Retrieved from: <http://www.useit.com/alertbox/digital-divide.html>
17. Mayer, R., 2000. Challenges to implementing ICT networks and services in rural areas. Paper presented at the Village Power Conference, Washington, DC, pp: 4-7.
18. Navas-Sabater, J., 2000. Use of telecommunication and information technologies in rural development. Paper presented at the Village Power Conference, Washington, DC., pp: 4-7.
19. Kanellopoulos, D.N., 2011. How can teleworking be pro-poor? Journal of Enterprise Information Management, 24(1): 8-29.
20. Sullivan, K., 2006. Internet extends reach of Bangladeshi villagers: cell phone-linked computers help break rural isolation. Washington Post: A12.
21. Islam, M.A. and K. Tsuji, 2011. Bridging digital divide in Bangladesh: study on community information centers. The Electronic Library, 29(4): 506-522.
22. Ibrahim, Z., A. Sulaiman and T.M. Faziharudean, 2008. The Roles of Community Based Telecenters in Bridging the Digital Divide in Rural Malaysia. World Academy of Science, Engineering and Technology, 46: 352-364.
23. Kang, B.S., 2009. Bridging the Digital Divide between Urban and Rural Areas: Experience of the Republic of Korea, ESCAP Technical Paper, Bangkok, Thailand: United Nations Economic and Social Commission for Asia and the Pacific.
24. Reino, S., A.J. Frew and C. Albacete-Saez, 2010. ICT adoption and development: issues in rural accommodation. Journal of Hospitality and Tourism Technology, 2(1): 66-80.
25. Huang, L., 2008. Bed and breakfast industry adopting e-commerce strategies in e-service. The Service Industries Journal, 28(5): 633-48.
26. Law, R., K. Leung and J. Wong, 2004. The impact of the Internet on travel agencies. International Journal of Contemporary Hospitality Management, 6(2): 100-107.
27. Christian, R., 2001. Developing an online access strategy: issues facing small-to-medium sized tourism and hospitality enterprises. Journal of Vacation Marketing, 7(2): 170-8.
28. Lubetkin, M., 1999. Bed-and-breakfast: advertising and promotion. Cornell Hotel and Restaurant Administration Quarterly, 40(4): 84-90.
29. Samenfink, W.H., 1999. Are you ready for the new service user? Journal of Hospitality and Leisure Marketing, 6(2): 67-73.
30. Zelenka, J., 2009. Information and communication technologies in tourism: influence, dynamics, trends. E + M Ekonomie a Management, 12(1): 123-32.
31. Sheldon, P., 2002. Information Technology Contributions to Biodiversity in Tourism. In Tourism, Biodiversity and Information, Eds., di Castri, F. and V. Balaji. Leiden, The Netherlands: Backhuys, pp: 449-456.
32. Harris, R. and D. Vogel, 2002. E-commerce for Community-Based Tourism in Developing Countries. Community Based Ecotourism in Southeast Asia, Thailand, 27 February-8 March 2002, Conference Report.

33. Pesonen, J., R. Komppula, C. Kronnberg and M. Peters, 2011. Understanding the relationship between push and pull motivations in rural tourism. *Tourism Review*, 66(3): 32-49.
34. Herrmann, P., M. Grieshaber, N. Muller and H. Thumann, 2008. *Urlaub auf dem Bauernhof/Lande*. Retrieved from: Emerald Group Publishing Limited, ISSN 1660-5373.
35. Egger, T., G. Favre and M. Passaglia, 2008. *Der Agrotourismus in der Schweiz, Analyse der aktuellen Situation und Empfehlungen für die Zukunft*. Retrieved from: Emerald Group Publishing Limited, pp: 1660-5373.
36. Cai, L. and M. Li, 2009. Distance-segmented rural tourists. *Journal of Travel and Tourism Marketing*, 26(8): 751-61.
37. Liu, A., 2006. Tourism in rural areas: Kedah, Malaysia. *Tourism Management*, 27(5): 878-89.
38. Cheuk, S., A. Atang and M.C. Lo, 2012. Community Attitudes towards the Telecentre in Bario, Borneo Malaysia: 14 Years On. *International Journal of Innovation, Management and Technology*, 3(6): 682-687. Retrieved from: <http://ijimt.org/papers/319-CM302.pdf>.
39. Mbaiwa, J.E., F.E. Bernard and C.E. Orford, 2002. Limits of acceptable change for tourism in the Okavango delta. Paper presented at the Environmental Monitoring of Tropical and Sub-tropical Wetlands International Conference, Maun Lodge, Maun, Botswana, pp: 4-7.
40. Mbaiwa, J.E., 2005. Enclave tourism and its socio-economic impacts in the Okavango Delta, Botswana. *Tourism Management*, 26: 157-172.
41. Kim, K., M. Uysal and M.J. Sirgy, 2013. How does tourism in a community impact the quality of life of community residents? *Tourism Management*, 36: 527-540.
42. Webster, C. and S. Ivanov, 2013. Transforming competitiveness into economic benefits: Does tourism stimulate economic growth in more competitive destinations? *Tourism Management*, 40: 137-140.
43. Belisle, F.J. and D.R. Hoy, 1980. The perceived impact of tourism by residents, a case study in Santa Marta, Columbia. *Annals of Tourism Research*, 7: 83-101.
44. Ahmed, Z.U. and F.B. Krohn, 1992. International tourism, marketing and quality of life in the third world: India, a case in point. In *Development in quality of life studies in marketing*, Eds., Sirgy, M.J., M. H. Meadow, D. Rahtz and A. C. Samli. Blacksburg, Virginia: Academy of Marketing Science, 4: 150-156.
45. Andereck, K., K. Valentine, R. Knopf and C. Vogt, 2005. Residents perceptions of community tourism impacts. *Annals of Tourism Research*, 32: 1056-1076.
46. Var, T. and Y. Kim, 1989. Measurement and findings on the tourism impact. Unpublished manuscript, Department of Recreation, Park and Tourism Sciences, Texas A and M University, USA.
47. Wang, S., Y. Fu, A.K. Cecil and S.H. Avgoustis, 2006. Residents' perceptions of cultural tourism and quality of life: a longitudinal approach. *Tourism Today*, 6: 47-61.
48. Jones, C. and M. Munday, 2004. Evaluating the economic benefits from tourism spending through Input-Output Frameworks: issues and cases. *Local Economy*, 19(2): 117-133.
49. Saenz-de-Miera, O. and J. Rosello, 2014. Modelling tourism impacts on air pollution: The case study of PM10 in Mallorca. *Tourism Management*, 40: 273-281.
50. Cuccia, T. and I. Rizzo, 2011. Tourism seasonality in cultural destinations: Empirical evidence from Sicily. *Tourism Management*, 32: 589-595.
51. Rosello-Nadal, J., A. Riera Font and A. Rosello, 2004. The economic determinants of seasonal patterns. *Annals of Tourism Research*, 31: 697-711.
52. Koc, E. and G. Altinay, 2007. An analysis of seasonality in monthly per person tourist spending in Turkish inbound tourism from a market segmentation perspective. *Tourism Management*, 28: 227-237.
53. Butler, R.W., 2001. Seasonality in tourism: Issues and implications. In *Seasonality in tourism*, Eds., Baum, T. and S. Lundtrop. Oxford: Pergamon, pp: 5-21.
54. Sutawa, G.K., 2012. Issues on Bali Tourism Development and Community Empowerment to Support Sustainable Tourism Development. *Procedia Economics and Finance*, 4: 413-422.
55. Teh, L. and A.S. Cabanban, 2007. Planning for sustainable tourism in southern Pulau Bangi: An assessment of biophysical conditions and their implications for future tourism development. *Journal of Environmental Management*, 85: 999-1008.
56. Chin, W.W., 1998. The partial least squares approach to structural equation modeling. In *Modern Business Research Methods*, Ed., Marcoulides, G.A. Mahwah, NJ: Lawrence Erlbaum Associates, pp: 295-336.
57. Tenenhaus, M., V.E. Vinzi, Y.M. Chatelin and C. Lauro, 2005. PLS path modelling. *Computational Statistics and Data Analysis*, 48(1): 159-205.
58. Wetzels, M., G.O. Schroder and V.C. Oppen, 2009. Using PLS path modelling for assessing hierarchical construct models: Guidelines and empirical illustration. *MIS Quarterly*, 33(1): 177-195.

59. Bagozzi, R.P. and Y. Yi, 1988. On the Evaluation of Structural Equation Models. *Journal of the Academy of Marketing Science*, 16: 74-94.
60. Gefen, D., D.W. Straub and M.C. Boudreau, 2000. Structural equation modeling and regression: Guidelines for research practice. *Communications of the Association for Information Systems*, 4(7): 1-78.
61. Nunnally, J.C., 1978. *Psychometric theory*. New York: McGraw-Hill.
62. Chin, W.W., 2010. How to write up and report PLS analyses. In *Handbook of partial least squares: Concepts, methods and application*, Eds., Esposito Vinzi, V., W.W. Chin, J. Henseler and H. Wang. New York: Springer, pp: 645-689.
63. Fornell, C. and D.F. Larcker, 1981. Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 48: 39-50.
64. Akter, S., J.D. Ambra and P. Ray, 2011. Trustworthiness in mHealth information services: An assessment of a hierarchical model with mediating and moderating effects using partial least squares (PLS). *Journal of The American Society For Information Science And Technology*, 62(1): 100-116.
65. Dewey, C., 2013. May 29. Mt Everest is overcrowded, polluted and nearing a crossroads, 60 years after first climb. *The Washington Post*. Retrieved from: <http://www.washingtonpost.com/blogs/worldviews/wp/2013/05/29/mount-everest-is-overcrowded-polluted-and-nearing-a-crossroads-60-years-after-first-climb/>
66. Baum, T. and L. Hagen, 1999. Responses to seasonality: the experiences of peripheral destinations. *International Journal of Tourism Research*, 1: 299-312.
67. Higham, J. and T. Hinch, T., 2002. Tourism, sport and seasons: the challenges and potential of overcoming seasonality in the sport and tourism sectors. *Tourism Management*, 23: 175-185.