

Analysis of the relationship between the establishment of Community Based-Tourism and multidimensional poverty reduction in rural households

Análisis de la relación entre el establecimiento del Turismo de Base Comunitaria y la reducción de la pobreza multidimensional en hogares rurales

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Abstract

The aim of this document is to analyze the relationship between the establishment of Community Based Tourism (CBT) and multidimensional poverty reduction in rural households in Mexico. For this purpose, a study has been carried out through a sample of rural households at the national level, between the years 2008 and 2018, using a multinomial logit model. The data were obtained from databases of poverty of the National Council for the Evaluation of Social Development Policy, and from databases of the National Household

Income and Expenditure Survey. The findings suggest that the CBT is a tourism governance model that contributes to multidimensional poverty reduction in rural households in Mexico, emphasizing that the greatest effect is shown on multidimensional extreme poverty. Advancing from a condition of multidimensional extreme poverty to one of multidimensional moderate poverty constitutes a titanic change, not only because people can increase their ability to satisfy their basic food needs and their well-being, but also because their conditions of vulnerability are reduced.

Key words: Community Based Tourism; multidimensional poverty reduction, rural households, tourism governance model, multidimensional extreme poverty, well-being.

Resumen

El objetivo de este documento es analizar la relación existente entre el establecimiento del Turismo de Base Comunitaria (TBC) y la reducción de la pobreza multidimensional en los hogares rurales de México. Para ello, se ha realizado un estudio a través de una muestra de hogares rurales a nivel nacional, entre los años 2008 y 2018, utilizando un modelo logit multinomial. Los datos se obtuvieron de las bases de pobreza del Consejo Nacional de Evaluación de la Política de Desarrollo Social y las bases de la Encuesta Nacional de Ingresos y Gastos en los Hogares. Los resultados revelan que el TBC es un modelo de gobernanza del turismo que contribuye a reducir la pobreza multidimensional en hogares rurales de México, haciendo énfasis en que el mayor efecto recae en la pobreza extrema multidimensional. El pasar de una condición de pobreza extrema multidimensional a una de pobreza moderada multidimensional constituye un cambio gigantesco para los hogares rurales, no sólo porque aumentan su posibilidad de satisfacer sus necesidades básicas de alimentación y con ello incrementan su bienestar, sino también porque se reducen sus carencias sociales y sus condiciones de vulnerabilidad.

Palabras clave: Turismo de Base Comunitaria, reducción de la pobreza multidimensional, hogares rurales, modelo de gobernanza del turismo, pobreza extrema multidimensional, bienestar.

1 Introduction

The tourism sector contributes 10.3 % to the global Gross Domestic Product (GDP), and concentrates 10.4 % of total employment worldwide (WTTC, 2020). Therefore, tourism is one of the leading sectors in the global economy, and it helps to generate well-being among the poorest and most marginalized sectors (Ashley & Mitchell, 2009; Scheyvens, 2007; Scheyvens & Russell, 2012). In countries like Mexico, where 43.9 % of the population lives in multidimensional poverty and 8.5 % lives in multidimensional extreme poverty (CONEVAL, 2020), tourism constitutes a path out of these conditions, especially for rural and indigenous communities (Espeso-Molinero et al., 2016). In 2020, 56.8 % of poor people at the national level belonged to the rural and indigenous population (CONEVAL, 2020).

Some forms of tourism, such Community Based Tourism (CBT), are more discussed in the literature when it comes to analyzing the fight against poverty (Gutiérrez-Pérez et al., 2014; Medina-Muñoz et al., 2016, Noyola-de la Llave et al., 2022). The CBT is a tourism governance model that has shown its effectiveness in poverty alleviation (Qian et al., 2017; Zapata et al., 2011) and it is considered as a good alternative to distribute economic benefits among communities (Eom et al., 2020). Basically, it is a sustainable strategy for tourism development (Okazaki, 2008), that produces benefits, as long as it is based on the active participation of local people. It involves working within a network and in a collaborative manner between interested parties (Reggers et al., 2016; Stoddart et al., 2020). It contributes to the rural economic development and the conservation of communal natural resources (Rozemeijer et al., 2001), while empowers communities and improves their sense of community belonging (Knight & Cottrell, 2016).

In Mexico, it has been demonstrated that the establishment of CBT has benefits for the development and well-being of marginalized and indigenous communities (Avila-Foucat & Rodríguez-Robayo, 2018; Taylor, 2017). Tourism is an important economic sector in the country that contributes 8.7 % to the GDP and employing 6 % of the workforce (INEGI, 2019). Despite Mexico is one of the most competitive Latin American tourist destinations (Guaita et al., 2021) and concentrates high levels of tourism (INEGI, 2022), little research has been conducted to analyze the relationship between the different tourism segments and their effects on poverty. The role of tourism in poverty reduction in the region is analyzed by Garza-

Rodríguez (2019), who confirms that for every 1 % increase in international tourism, there is also a growth of 0.46 % in household consumption per capita, therefore poverty decreases. In rural areas of Mexico Avila-Foucat (2002), research the determinants that contribute to the diversification of the rural households involved into wildlife tourism in the State of Oaxaca. She concludes that sustainable indicators such as community organization, ownership of communal land (*ejido*), social capital and community work (*tequio/faena*), improve local livelihoods. Other studies affirm that these traditional governance systems generate a higher sense of community and encourage the establishment of tourism as a tool of generating economical income in communities, and thus fight against poverty (Avila-Foucat & Rodríguez-Robayo, 2018; Magaloni et al., 2019).

Several recent studies have pointed out the importance of tourism in sustainable development of indigenous and rural communities of developing countries (Espeso-Molinero & Pastor-Alfonso, 2020; Morales et al., 2021; Reyes-Santiago et al., 2022). Others have analyzed the relationship between tourism and poverty reduction (Croes & Rivera, 2017; Fang et al., 2021; Kim et al., 2016; Raza & Shah, 2017), but there are very few studies that examined the multidimensional poverty focus in tourism (Puig-Cabrera & Foronda-Robles, 2020; Scheyvens & Hughes, 2019), and till date in the existing literature no attempt to analyze how tourism governance models, like CBT, reduce poverty in its multidimensional approach, which explores material and social deprivation through nine indicators: i) per capita income, ii) average educational lag in the household, iii) access to health services, iv) access to a social security system, v) number and quality of enclosed spaces in the household, vi) access to basic services in the household, vii) access to nutritious and quality food, viii) degree of social cohesion and ix) accessibility to a paved road (Alkire, 2015; Alkire & Foster, 2009; CONEVAL, 2018).

Therefore, this paper analyzes the relationship between the establishment of CBT and multidimensional poverty reduction in rural households. Studying this link is important to complete the gap already made with the multiple studies of the unidimensional poverty approach and those related with economic growth. This paper not only makes a first step towards filling those gaps in order to provide a conceptual model to analyze the relationship between Community Based Tourism and poverty in its multiple dimensions, but also it is the

first to distinguish among the categories of household poverty: extreme poor household, moderate poor household and non-poor household. This allows future research to undertake a multidimensional treatment of poverty as it links to tourism and its governance models. Furthermore, this approach can help both companies to make more informed decisions that contribute to reducing poverty in developing countries and governments to design and implement effective anti-poverty tourism policies, especially in rural areas.

The research findings highlight the potential of CBT as a sustainable tool of multidimensional poverty alleviation in developing countries and rural households of these regions. The results confirm that extreme poor households that implement the CBT governance model increase its probability to leave from this condition and move to moderate poverty, one category of multidimensional poverty where well-being is improved due to the reduction of social deprivation and the opportunity to have higher income. Moreover, it was found that when a household in moderate poverty engages in the CBT, it is more likely for it to fall into non-poverty than to remain poor. The fight against poverty through tourism and tourism governance models such as CBT requires understanding the different categories of poverty and exploring the Sen's capability approach as a framework to analyze poverty beyond income and relates it to dignity and human opportunities. The paper is divided into six sections including the introduction. In Section 2, we present the literature review. The data and method are explored in Section 3. The main results and the discussion are presented in Section 4 and 5. Lastly, the conclusions are drawn in Section 6.

2 Community Based Tourism

The relationship between tourism and poverty is discussed by several authors (Ashley et al., 2001; Ashley & Mitchell, 2009; Scheyvens, 2007). Essentially, the subject is studied from the Pro-Poor Tourism (PPT) approach, that uses tourism, in any of its forms, as an instrument to poverty reduction (Scheyvens & Russell, 2012). However, it has been demonstrated that CBT achieves a more effective poverty reduction in world tourist destinations (Gutiérrez-Pérez et al., 2014).

CBT is an approach that proposes coexistence between the local community and tourists (Harris, 2009). It is a management model based on community participation (Murphy, 1985; Murphy & Murphy, 2004), that achieves an improvement in livelihoods (Qian et al., 2017) and

provides the opportunity to allocate equal distribution of benefits among community members (Qian et al., 2016). It is also an approach that promotes community tourism development through the conservation of natural and cultural resources (Hiwasaki, 2006), since currently one of the main challenges is to achieve the insertion of sustainability in the community, not only from the local perspective, but also from respect to tourist consumption (Pelegrín et al., 2022; Velázquez-Castro et al., 2020; Merli et al., 2019).

Some authors refer to “sustainable” CBT as the one that must incorporate environmental, social, economic and cultural aspects (Sriyani, 2022; He et al., 2021; Guaita et al., 2019). Other authors mention that the CBT sphere is sustainable from its original conception and planning because it includes strengthening the natural, social, cultural, economic, institutional, and technological communities, so that rural communities can diversify their activities by adopting sustainability in order to lessen or reduce negative impacts on fragile environments (Dendup et al., 2022; Pasanchay & Schott; 2021; García et al., 2021). In this sense, the addition of the word “sustainability” is a pleonasm, therefore an epistemic dialogue in this topic is required.

What has been clear is that in rural areas, where CBT can be developed, tourism contributes to diversify local economies, helps to supplement income; and promotes local development to make proper use of all available resources (natural, cultural, and social) (Mokgalo & van der Merwe, 2022; Knollenberg et al., 2021; Cáceres-Feria et al., 2021; Mayaka et al., 2019). Moreover, tourism governance models contribute to strengthens and competitiveness of tourism destinations (Noyola-de la Llave et al., 2017), which is vital for economic development and for overcoming long-term tourism crises (Guaita et al., 2021). Through income generation, job creation, business start-ups, and a development of infrastructure and basic services generated by tourism, residents of vulnerable regions increase their possibilities of escaping poverty and extreme poverty (Spenceley & Meyer, 2012; Yu et al., 2019); especially if there is an active participation of the community and work is done to empower the poorest people (Zielinski et al., 2020).

Despite the benefits of CBT, this kind of tourism does not always have advantages (Blackstock, 2005; Zapata et al., 2011). The tourism industry is prone to favor those who

actively participate in it and marginalize certain sectors of the community that do not have the same decision-making power (Taylor, 1995). Thus, identifying the impact of CBT on poverty reduction is required to guide tourism policy and to evaluate strategic actions to fight against poverty.

So far, most studies rely on a quantitative approach to explore the relationship between CBT and poverty reduction. Qian et al. (2016), make a comparison between two governance systems in China, based on in-depth interviews and questionnaires at the household level. They identified that CBT has larger economic, ecological, and social benefits than Lease Operation Tourism (LOT). Qian et al. (2017), confirmed these results when they analyzed the livelihoods under the CBT and LOT models. Through the use of scale and indexing methods, fifteen indicators were studied that incorporate several assets: natural, physical, human, social and financial capital. According to their findings, 90 % of the indicators in the CBT model have higher weighted values than the ones in the LOT. Therefore, CBT is a more effective tourism governance model in the fight against poverty. Xiao et al. (2019), use a probit model to analyze the impact of rural coastal tourism on the livelihood strategies of farmers' households in a region in China. They confirmed that the participation of farmers in this tourism niche is very low, so diversification should be encouraged.

In Mexico, there is still no research that relates the concrete effects of CBT on multidimensional poverty reduction. Taylor (2017), studies the implementation of the CBT model in the Ek'Balam project in the Yucatan Peninsula, and she observes the impact on the well-being of indigenous communities. Through her study, she concludes not only that establishment of the CBT decreased the migration of young people, but also increased the number of people dedicated to making handicrafts. This has generated economic growth, maintaining the conservation of cultural heritage. Avila-Foucat & Rodríguez-Robayo (2018), explore the determinants of household diversification in coastal communities in Oaxaca. Through two models, multiple linear regression, and binomial logistic regression, they confirm that determinants of the diversification of a household engaged in wildlife tourism are: (1) the average age of the members of the household, (2) their environmental awareness, (3) the characteristics of the land, (4) the membership or participation of the members of the household in an organization (cooperative) and (5) government transfers. Their research

shows that this tourism governance model contributes to satisfying the basic needs of the communities under study.

In sum, the literature review reveals the lack of studies that explore the relationship between multidimensional poverty and tourism governance models, such as the CBT. Studies promoted from this perspective will help improve decision-making in tourism, and they will guide the establishment of public policies in vulnerable regions and developing countries, such as Mexico.

3 Data and method

The data for this study were obtained from the National Household Income and Expenditure Survey (ENIGH), and from the poverty databases published by the National Council for the Evaluation of Social Development Policy (CONEVAL), an institution created to evaluate social policy and measure poverty in Mexico.

The ENIGH survey contains information on incomes and expenses in Mexican households, as well as the socioeconomic conditions of the population. It is representative in both rural and urban areas, at national and regional levels. In consequence, it is possible to disaggregate the information by region and focus the study at the rural level. The main sociodemographic and economic characteristics of households are obtained from the information provided by the household heads, as they are responsible and, in most cases, they constitute the main economic support of the household (INEGI, 2018b).

On the other hand, the CONEVAL database is used to identify the poverty levels in rural households in Mexico. CONEVAL uses the ENIGH survey and its Socioeconomic Conditions Module (MCS) to estimate multidimensional poverty levels in Mexico, which are published biannually.

The study was carried out using pooled data of rural households at the national level, during the period 2008-2018 obtained specifically from the ENIGH (INEGI, 2018a).

3.1 Econometric model

The methodology consists of a cross-sectional data analysis based on a multinomial logistic regression model (MNL), whose main objective is to identify the effects of CBT on multidimensional poverty alleviation in rural Mexico, controlled by other variables.

The MNL are simultaneous binary logit estimates that allow us to predict how individual variables affect the probability of observing a given result (Long & Freese, 2001). The MNL is used due to the nature of the dependent variable, since it is categorical (3 categories), indeed, it is a simple extension of binary logistic regression. A probit or logit regression model with a dichotomous dependent variable (poor and non-poor) could also have been generated, but the multivariate model is a better method because it allows for more than two categories of the dependent variable (Alayande, 2018). Another alternative method could be discriminant function analysis, nevertheless, this requires three assumptions to be met: normality, linearity, and homoscedasticity (Starkweather & Moske, 2011).

The MNL constitutes the main multivariate approach to study the dynamics of poverty (Baulch & Vu, 2011). The MNL is a discrete choice model that has been used to analyze and identify the higher returning livelihood strategies in rural households, including tourism, in order to reduce rural poverty in less developed countries (Paudel, Khatiwada et al., 2017).

The MNL does have an important assumption which could be a limitation if it is not met. The model requires independence among the dependent variable categories (Starkweather & Moske, 2011; Fernández-Ramos et al., 2016) which "states that the odds ratio for one category in the MNL model is independent of the odds ratios for other categories" (Greene, 2003). Therefore, the model can be estimated when the categories can be reasonably dissimilar as is our study. Another limitation that must be solved is multicollinearity among the explanatory variables. Specifically, multicollinearity should be evaluated with simple correlations among these variables (Starkweather & Moske, 2011). The model is attractive because its independent variables can be either dichotomous (i.e., binary) or continuous (i.e., interval or ratio in scale).

In this research, the MNL is used to empirically analyze the household's main drivers of being multidimensional poor explained by CBT and factors as: (1) whether some paid work associated with tourism is carried out in the household; (2) whether community work is

carried out and (3) whether it is easy to access to support networks in order to make improvements in the locality.

The model considers rural household's multidimensional poverty as a dependent variable classified in three categories: (1) extreme poor (considered as the base category of the model), (2) moderate poor and (3) not poor, according to CONEVAL's classification. Rural communities are localities with less than 2,500 inhabitants (CONEVAL, 2018). CONEVAL developed the multidimensional measurement of poverty based on Amartya Sen's capability's theory and the Multidimensional Poverty Index created by James Foster and Sabina Alkire. CONEVAL defines people in multidimensional poverty as those who have incomes below the poverty threshold by income, and whose social rights are not guaranteed, at least one of them. The population living in poverty is classified in three groups: i) population in extreme poverty, which has an income below the poverty-income threshold, and at least three social deprivations; ii) population in moderate poverty, and iii) the non-poor and non-vulnerable population who does not present social deprivation and has an income above the poverty-income threshold (CONEVAL, 2010). The methodology developed by CONEVAL is appropriate to guarantee a dissimilarity among the categories of the dependent variable.

This analysis constructs the econometric model with the rural household's multidimensional poverty as dependent variable, and CBT and other typical independent variables that are taken from the literature described in Table 1. The studies developed by Flores-Amador et al. (2015), Qian et al. (2016, 2017), Avila-Foucat & Rodríguez-Robayo (2018), Fernández-Ramos et al. (2016), Fierros & Mora (2022), and Cerón & Yúnez-Naude (2015); contributed significantly to support the variables introduced in the model.

The principal explanatory variable CBT is estimated with the interaction of two variables: 1) a dummy that represents whether at least one member of the household works in tourism, and 2) a dummy that represents whether at least one member of the household performs half-hour or more weekly community work in the home. The CBT variable is the product of these two dummy variables previously explained. It takes the value 1 if at least one member of the household works in tourism and simultaneously performs community work, and 0 if

otherwise. In Mexico the CBT is mainly developed in rural localities (Flores-Amador et al., 2015).

To determine if a household can be considered as tourism household (household with at least one member engaged in tourism), the classification of the Tourism Satellite Account of Mexico (CSTM) and International Recommendations for Tourism Statistics of the UNWTO (INEGI, 2013; UNWTO, 2010), were used. These documents present a list of tourism characteristic and related activities.

The information relative to community work and social networks were obtained from ENIGH (INEGI, 2018a). To be considered as a community work/*tequio* or *faena* household, a threshold of half an hour a week of community work is established, because it corresponds to the average at the national level. This variable considers the time spent doing unpaid work, with the aim of transforming the community and maintaining common infrastructures, such as road repair, public works or cleaning rivers and local spaces. Cooperation in society, understood as a capacity to organize and improve the living conditions, is a manifestation of social capital, as well as the degree of associationism and cooperation in the rural environment, that determine the ability of rural households to adopt livelihood strategies other than agricultural activity (Salgado-Nieto, 2019).

The access to social networks variable considers the perception of people about how easy it to acquire support, reciprocity and/or accompaniment to obtain money, work, health care and cooperation to make improvements in the community. In this variable, the opinion of household head is valued, but if he is not available, the one provided by some other family member is considered.

Furthermore, to determine if a household can be considered as an agricultural household (households with at least one member engaged in agricultural activities), the criteria of the North American Industry Classification System (INEGI, 2018c) were used. This document presents a list of agricultural activities.

Following the literature, in the analysis we will include household-level sociodemographic information we account for the sex, age and education level of the household head, as well as the region where the household is located. The regional variables North Region, Northeast

Region, Western Region, Central Region, Gulf Region, Southern Region and Southeast Region, which are the names of socioeconomic regions of Mexico.

The MNLM regression model is as follows.

$$Pr(Y_{it} = j) = \Phi(\beta_0 + \beta_1(\text{tourism } hh_{it}) + \beta_2(\text{community work}_{it}) + \beta_3(CBT_{it}) + \lambda X_{it} + u_{it})$$

Where:

$$CBT_{it} = \text{tourism } hh_{it} * \text{community work}_{it}$$

X_{it} = vector of control variables in the model (sex, age and education of the household head, access to social networks, agricultural household, and region)

u_{it} = the random error.

$Pr(Y_{it} = j)$ represents the probability that the household "i" in the year "t" falls into one of the three poverty categories: extreme poor, moderately poor, and not poor. This probability is explained by a logistic function ($\Phi(*)$), that depends on explanatory variables.

In order to rule out the presence of multicollinearity between explanatory variables, an evaluation with simple correlations was estimated (Starkweather & Moske, 2011). The results are presented in a correlation matrix where all the coefficients are less than 0.6 (see Appendix 1).

The results of MNLM are difficult to interpret, and they are usually accompanied by the marginal effects, that represent the marginal change in the dependent variable that results from a change in the independent variable. In particular, the marginal change is represented by the product of the estimated coefficient with the value of the accumulated density evaluated in the value of interest of the independent variable (Dow & Endersby, 2004).

In order to obtain the marginal effects, it is necessary to estimate a regression model using a base category (Fernández-Ramos, et al., 2016). In this research, results 1 and 3 were the base categories. Therefore, the marginal effects of the three possible outcomes of the dependent variable (extreme poor, moderate poor, and non-poor) were obtained for each of the base categories (extreme poor and non-poor). The STATA.16 software estimates the MNLM and its marginal effects; and provides warnings in case the explanatory variables are collinear.

Table 1. Description of variables

Variable name	Metrics	Literature review
Dependent variable		
Multidimensional poverty	Variable that takes three different values according to the category of poverty: 1 = Extreme poor household (base category) 2 = Moderate poor household 3 = Non-poor household	Garza-Rodriguez et al. (2010) analyze chronic and transitory poverty in Mexico, by categorizing the households into poor and non-poor. Fernandez-Ramos et al. (2016) used the poverty status of the household with four levels in Mexico.
Explanatory variables		
<i>Characteristics of the household head</i>		
Sex of household head	A binary variable that takes the value 1 if the household head is male, and 0 if female.	Most studies use this variable as a control (Fierros & Mora, 2022; Mora & Van Gameren, 2021; Fernández-Ramos et al., 2016; Cerón & Yúnez-Naude, 2015; Garza-Rodriguez et al., 2010).
Age of household head	Age of household head in years.	Most studies use this variable as a control (Fierros & Mora, 2022; Mora & Van Gameren, 2021; Fernández-Ramos et al., 2016; Cerón & Yúnez-Naude, 2015; Garza-Rodriguez et al., 2010).
Education level of household head	Six binary variables with following education levels: 1 = No education. 2= Elementary school incomplete. 3= Elementary school or low middle school incomplete. 4 = Middle school complete or low high school incomplete 5 = High school complete.	Education is an important barrier for the poor to have the possibility to dedicate themselves to tourism (Fierros & Mora, 2022; Mora & Van Gameren, 2021; Adiyia et al., 2017)

6 = Bachelor school complete or incomplete

Characteristics of the household

Tourism household	A binary variable that takes the value 1 if at least one member of the household is engaged in tourism and 0 if none is.	Tourism generates a positive impact on the income of rural and urban households (Njoya & Seetaram, 2018; Núñez et al. 2021). The CSTM uses a methodology that classifies tourism activities under different codes (INEGI, 2018c).
Community work/ <i>tequio</i> or <i>faena</i>	A binary variable that takes the value 1 if at least one member of the household does a minimum half-hour or more weekly community work, and 0 if otherwise.	Community work known as <i>tequio</i> or <i>faena</i> is an expression of social capital and the participation of household members in community improvements (Avila-Foucat & Rodríguez-Robayo, 2018; Flores-Amador et al., 2015). <i>Tequio</i> allows them to solve coordination problems and to sanction those people who refuse to collaborate with activities that promote the well-being of the community (Magaloni et al., 2019).
Community Based Tourism	A binary variable that takes the value 1 if at least one member of the household is engaged in tourism and simultaneously does community work and 0 if otherwise.	The construction of this variable is the contribution of this research. It is the interaction between the variables tourism household and community work.
Access to social networks	A binary variable that takes the value 1 if a member of the household has access to social networks, and 0 if otherwise.	Social networks are phenomena linked to the degree of social cohesion (CONEVAL, 2018). The more access to social networks (close friends and relatives), the lower the poverty of households (Fierros & Avila Foucat, 2017; Barbieri & Mahoney, 2009; Mushongah & Scoones, 2012)
Agricultural household	A binary variable that takes the value 1 if at least one member of the household works in agricultural activities and 0 if none does.	Working in agricultural activities increases the probability to be in poverty (Fierros & Mora, 2022; Cerón & Yúnez-Naude, 2015). The agricultural activities are classified with code 11 of the NAICS, adapted to the household version (INEGI, 2007).

Region	<p>Seven binary variables that take the value 1 if the household is located in the following regions, and 0 if otherwise:</p> <p>1 = North region: Chihuahua, Coahuila, Nuevo León, Durango, San Luis Potosí, Zacatecas, Aguascalientes.</p> <p>2 = Northeast region: Baja California, Baja California Sur, Sinaloa, Sonora</p> <p>3 = Western region: Nayarit, Jalisco, Colima, Michoacán.</p> <p>4 = Central region: Mexico City, Guanajuato, Hidalgo, Puebla, Querétaro, Estado de México, Morelos, Tlaxcala.</p> <p>5 = Gulf region: Tamaulipas, Veracruz, Tabasco.</p> <p>6 = Southern region: Guerrero, Oaxaca, Chiapas.</p> <p>7 = Southeast region: Campeche, Yucatán, Quintana Roo.</p>	<p>Regional household conditions have a direct impact on poverty levels (Mora & García; 2021; Cerón & Yúnez-Naude, 2015; Taylor et al., 2008).</p>
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Source: own elaboration

4 Results

The multinomial logit results whose coefficients can be interpreted as marginal effects (dy/dx) (percentage points) for discrete changes are presented in Table 2. These findings represent the probability that a rural household in Mexico has a condition of extreme multidimensional poverty, moderate multidimensional poverty, or non-poverty, considering explanatory variables and controls specified in Table 1.

Table 2. Results of the estimation of the MNL

Explanatory variables	Extreme poor household	Moderate poor household	Non-poor household
	dx/dy	dx/dy	dx/dy
<i>Characteristics of the household head</i>			
Sex of household head	0.00412*	-0.000420	-0.00370
Age of household head	-0.00208***	-0.00154***	0.00361***
Education of household head level 2	-0.0779***	-0.0144***	0.0923***
Education of household head level 3	-0.133***	-0.0525***	0.186***
Education of household head level 4	-0.166***	-0.0806***	0.246***
Education of household head level 5	-0.192***	-0.174***	0.367***
Education of household head level 6	-0.213***	-0.309***	0.522***
<i>Characteristics of the household</i>			
Tourism household	-0.111***	-0.0483***	0.159***
Community work	0.0229***	-0.00175	-0.0211***
Community Based Tourism	-0.0413**	-0.00421	0.0455***
Access to social networks	-0.0220***	-0.0229***	0.0449***
Agricultural household	0.0654***	0.0819***	-0.147***
Region 2	-0.0354***	-0.100***	0.136***
Region 3	-0.000874	-0.0243***	0.0252***
Region 4	0.00975***	0.0534***	-0.0631***
Region 5	0.0732***	0.0806***	-0.154***
Region 6	0.174***	0.0921***	-0.266***
Region 7	0.0268***	0.0164***	-0.0432***
Observations	103,148	103,148	103,148

p < 0.01, ** p < 0.05, * p < 0.10.

Source: own elaboration based on ENIGH 2008, 2010, 2012, 2014, 2016 and 2018 data.

4.1 CBT

The results of the multinomial logit model reveal that rural households that implement the CBT governance model increase their probability of belonging to the non-poor category by a 4.5 %, compared to rural households that are not engaged in tourism and do not carry out community work (*tequio* or *faena*). The estimated coefficients also suggest that developing the CBT model reduces the probability of a household of being extremely poor by 4.1 %, compared to households that do not carry out this pro-poor tourism model. These findings show that the CBT improves the economic conditions of rural households, given that moving from extreme poverty, with the greatest level of deprivation, to moderate poverty (where social deprivation is reduced, access to services is improved, and income is higher) or non-poverty constitute a significant change in the well-being of families. Therefore, the results are consistent with the literature that demonstrates that the CBT governance model contributes to the fight against poverty in rural areas and improves local livelihoods (Qian et al., 2017; Taylor, 2017; Zapata et al., 2011).

4.2 Tourism household

Furthermore, the findings suggest that households with at least one member engaged in tourism decrease their probability of being extremely poor by 11.1 %, in comparison to households where none of its members work in the tourism sector. The effect is similar for moderate poverty: if at least one member of the household is engaged in tourism, the probability of the household of being moderately poor decreases by 4.8 %, compared to households where none of its members work in tourism. It is also observed that households where at least one member works in tourism increase their probability of being non-poor by 15.9 %, compared to households that do not work in the tourism sector. These results are consistent with previous research, which reveals that households dedicated to tourism generate higher salaries and they strengthen their livelihood strategies, allowing them to reduce their vulnerability and poverty (Adiyia et al., 2017; Njoya & Seetaram, 2018).

4.3 Community work/*tequio* or *faena*

Households with at least one member performing at least half of hour a week of community work; are 2.2 % more likely to be extremely poor compared to households whose members

do not perform *tequio*-related work. Community work or *tequio* does not have a significant effect on the probability of a household of being moderately poor. In addition, households where at least one its members dedicate at least half an hour a week to community work decrease their probability of being non-poor by 2.1% compared to households where communal tasks are not performed. This is most probably, when conditions of deprivation are experienced, productive hours are used for subsistence activities and not for tasks related to communal work.

4.4 Easy access to social networks

Rural households that perceive have easy access to social networks decrease their probability of being extremely poor by 2.1 % compared to households that do not perceive such support. This perception of the ease of access to social networks has a similar effect in moderate poverty: the probability of belonging to this category decreases by 2.2 % compared to households that do not perceive that it is it easy to obtain support from their community. Furthermore, the ease of accessing to social networks increases the probability of being non-poor by 4.4 %. The findings coincide with studies that affirm that the easier it is for people to access to social capital, the greater the probability that they escape from poverty (Avila-Foucat & Rodríguez-Robayo, 2018).

4.5 Sex of household head

If the household head is engaged in tourism and he is a male, the probability of the household of being extremely poor is 4.1 % higher than those that have a woman as the head of the family, and she works in tourism. If the head of the family is a male dedicated to tourism, the probability of the household of being non-poor decrease by 6.3 % compared to those households headed by a woman who works in tourism. This is most likely since tourism is a sector that generates many job opportunities for women in developing countries (Croes & Rivera, 2015). Also, it could be due to the existence of public policies whose aim is the empowerment and the increase of well-being of rural women, through the sale of handicrafts, food, souvenirs and through their inclusion in productive projects, where they can generate and distribute a greater income at home (Taylor, 2017).

4.6 Age of household head

The results indicate that for each additional year of the household head, the probability of the household to not belong to any category of multidimensional poverty increases. These results are similar to the findings reporting that having an older household head increases the probability of leaving from chronic poverty in Mexico (Garza-Rodriguez et al., 2010).

4.7 Educational level of the head of the household

The estimates also show that the higher the level of education of household head, the lower the probability for a household to be extremely poor, in comparison with the households whose household head have no education. If the household head has 5 and 6 level education -complete or incomplete-, the probability of the household of falling into extreme poverty decreases by 21.3% and by 19.3%. If the household head has upper level 2 education completed, household's poverty decreases, in comparison to the households whose head does not have any kind of education.

These effects are similar for the moderate poverty category, where it is observed that if the head of the household has completed tertiary education, the probability of being moderately poor decreases by 30.9 % and by 17.4 % if the head of the household has completed upper secondary school, compared to the households whose head have no education.

One of the most important results is observed in the quadrant of non-poor households: if the household has a literate head, its probability of being non-poor decrease is 52.2 %, compared to households whose head do not have any kind of education. These results are consistent with previous studies showing that if the head of a household has completed bachelor's education, the probability of escaping multidimensional poverty significantly increases in rural areas of Mexico (Fernández-Ramos et al., 2016; Garza-Rodriguez et al., 2010).

4.8 Agricultural household

The results also show that for households with at least one member engaged in agricultural activities, their probability of being in extreme poverty increases by 6.5 % compared to households whose members are not employed in the agricultural sector. The fact that at least one member of the household is employed in the agricultural sector increases the probability of being moderately poor by 8.1 % compared to those households that are not

engaged in agricultural activities. The same effect is observed in the non-poor dimension, where performing agricultural work decreases the probability of the household of being non-poor by 14.7 %. This may be due to the fact that agricultural activities are not very efficient, and they are insufficient to subsistence in rural environments (Mora & Cerón, 2015).

4.9 Economic region

The economic region where the household is located has a significant relationship with the probability of being multidimensionally poor. Households located in the Northwest Region decrease their probability of being extremely poor by 3.5 % compared to households in the North Region, while households in the South Region increase their probability of being extremely poor by 17.3 % compared to the North Region. As shown in the results, a household located in the Central Region increases by 0.9 % the probability of being extremely poor and by 5.3 % the probability of being moderately poor compared to households located in the Northern Region. The results also suggest that living in the Yucatan Peninsula increases the probability of being extremely poor by 2.6 % and of being moderately poor by 1.6 % compared to households located in the Northern Region. The evidence also shows that living in the Yucatan Peninsula decreases the probability of being non-poor by 4.3 % with respect to households located in the Northern Region of the country. These findings are in line with information from CONEVAL (2019), which confirms that the greatest challenges to fight against poverty are focused in the south and southeast of the country, regions that present poverty rates between 50 % and 80 %.

5 Discussion

The results of this study suggest that there is a relationship between the CBT governance model and the multidimensional poverty reduction in rural areas. Particularly, this effect is greater for extreme poverty. The data also shows that tourism is a powerful tool that benefits the poor, especially those in the most vulnerable and precarious conditions. In this context, there are several issues to be discussed.

First, one of the major findings of this study is the fact that rural households in extreme poverty that implement a CBT governance model decrease their probability of being extremely poor. This is one of the most severe forms of poverty, and individuals in this

condition are not able to satisfy their basic food needs. Furthermore, they are more vulnerable and prone to suffer the deprivation of political, participatory, civil, and social freedoms (Sen, 2000). These results support the argument that tourism is more valuable for the poor at the lowest levels of economic development (Croes, 2014). It also coincides with the findings of Croes & Rivera (2017), who reveal that the distributive effects of tourism are visible in the income received by households in rural and urban areas, although they observe that the greatest benefit is channeled to the lowest levels of poverty.

Therefore, tourism constitutes an opportunity for people living in extreme poverty not only to achieve the capacity to generate income, but also to escape from a condition of deprivation of their social and human rights.

Second, the CBT variable analyzed in this study reveals that households that implement this form of pro-poor tourism increase their probability of being non-poor. This confirms what was argued by Qian et al. (2017), who show that CBT not only contributes to improving local livelihoods in rural areas in China, but also to rural poverty-fighting policy of the country. The results are also in line with Zapata et al. (2011), who conclude that CBT with bottom-up approach is more effective against poverty than other approaches, and that it is also effective in the seeking of benefits for local economic development. It also coincides with the findings of Taylor (2017), who states that CBT not only contributes to generate income for communities, but also boosts local employment, especially for women in the tourism sector.

Third, the results show that there is a relationship between the CBT variable, i.e., the fact that at least one member of the household is engaged in tourism and simultaneously in community work, and the probability of the household to improve from being moderately poor to non-poor; that is, when a household that is in a situation of moderate poverty engages in the CBT, it is more likely for it to fall into non-poverty rather than to remain poor. In this sense, the literature on CBT has not obtained answers around this specific kind of poverty. However, studies on poverty and tourism show that moderate poverty is less sensitive to the improvement of livelihoods than extreme poverty (Croes & Rivera, 2017). The jump from moderate poverty to non-poverty is less significant in comparison to the giant leap from extreme poverty to lower intensities of poverty. People in extreme poverty require greater capabilities to get out from their deprivation conditions; however, belonging to the group of

people in moderate poverty can be associated with improved livelihoods, since this people have access to food security, they have more opportunities to reach subordinate work opportunities, they perceive income above the welfare line and their social deprivation is lower (CONEVAL, 2013).

Fourth, rural households in extreme and moderate poverty that are engaged in agricultural activities are more likely to remain poor; however, when these households engage in tourism activities, the probability of being extremely and moderately poor decreases significantly. Mora and Cerón (2015), demonstrate that agricultural activity is insufficient for the subsistence of rural households in Mexico; therefore, diversification towards non-agricultural and efficient activities constitutes a path out of poverty. In this regard, the results demonstrate that, unlike agricultural activities, tourism is an escape route from multidimensional poverty for rural households.

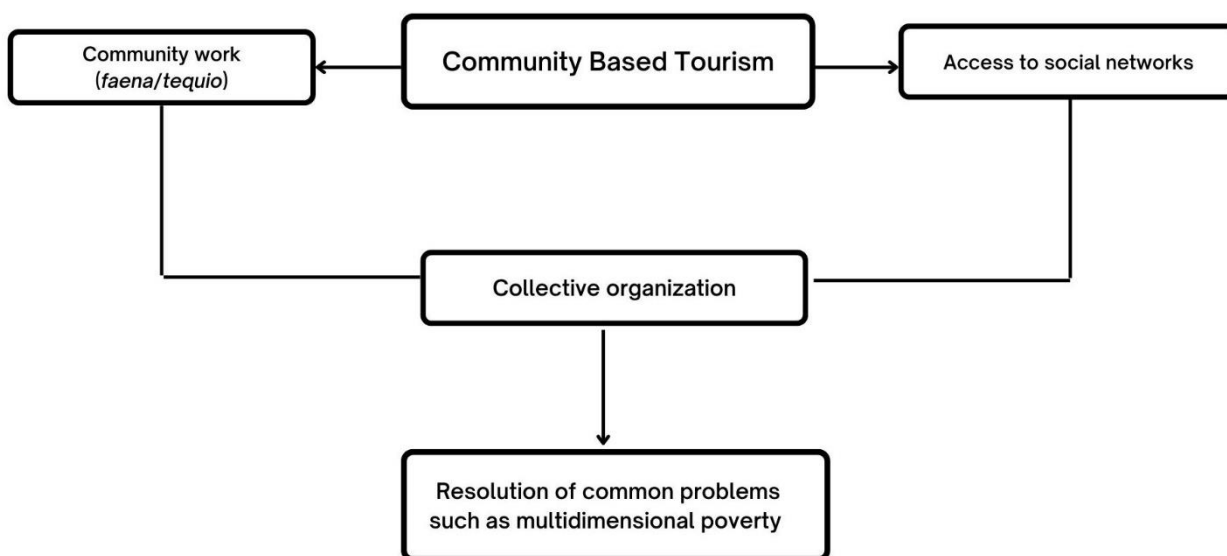
Fifth, our empirical findings are consistent with the ones of Avila-Foucat & Rodríguez-Robayo (2018), who show that factors such as social cohesion, performing community work under the figure of *tequio*, being part of an organization and owning farmland, are related to livelihood diversification and improved well-being. Magaloni et al. (2019), show that traditional governance mechanisms such as *tequio*, allow coordinating communities in activities that promote well-being. These results are also consistent with the findings of Avila-Foucat (2002), who confirms that social cohesion is an important indicator related to sustainable development and that it allows community management of local resources.

In summary, our findings demonstrate that CBT is a sustainable tourism governance model related with improved rural household welfare and multidimensional poverty alleviation, particularly for the poorest and most vulnerable.

Another finding of this study is the conceptual model developed to analyze the relationship between Community Based Tourism and multidimensional poverty reduction in rural households in less developed countries. This model defines CBT as a sustainable governance model (Qian et al., 2017; Qian et al., 2018), which is integrated by traditional governance mechanisms characteristic of Mexican rural communities: community work known as *tequio* or *faena* and access to social networks to obtain cooperation among households. Through the development of capabilities, this collective organization model

enables communities to solve common problems such as multidimensional poverty that not only considers income lines; but also, other dimensions that affect human well-being. Figure 1 presents this conceptual model, which could be applied in different developing regions such as Latin America and Asia, where income generating activities require community cooperation and social organizations among households (Modrego & Berdegué, 2015). These forms of organization are transferred to tourism which is an income generating activity, resulting in the CBT; and CBT helps to reduce poverty in different dimensions.

Figure 1. Conceptual model to analyze the relationship between Community Based Tourism and multidimensional poverty reduction



Source: own elaboration

6 Conclusions

This study provides a conceptual model to analyze the relationship between Community Based Tourism and poverty in its multiple dimensions by showing, on the one hand, the strong empirical relationship between establishing the CBT governance model and the probability that rural households who live in multidimensional poverty can escape from this condition, especially poor people who live on multidimensional extreme poverty situations, on the other, a new way to analyze and measured the effects of tourism and its governance models in poverty alleviation and sustainable development in rural areas of developing countries. The evidence of this study suggest that income is not enough to understand and

eradicate poverty, consequently, we propose that theoretical and empirical studies dealing with this issue should attempt to analyze the multidimensional nature of poverty where multiple categories affect community development and well-being, conceived as the freedom of people to live a dignified, fulfilling life with opportunities to achieve their valued states. Thus, the multidimensional approach of poverty on tourism literature should consider income, access to quality food, health services, education, social security, basic services in the household, degree of social cohesion, accessibility to a paved road and other dimensions that could be incorporated into poverty measurements.

The evidence found in this study indicates that establishing the CBT governance model is related to an increase in the probability that people who live in multidimensional extreme poverty can escape from this condition, which is one of the most severe forms of poverty; this fact indicates that they can move into the multidimensional moderate poverty category, which not only increases access to social development rights (such as adequate and nutritious food, health, education, and the right to decent housing), but also increases the probability to generate an income above the poverty threshold by income in rural areas. Considering one of the major dilemmas of poverty and its link to tourism is the difficulty for the extreme poor to gain direct benefits from tourism (Scheyvens & Hughes, 2019), the evidence of this paper must be regarded as an achievement to improve tourism studies and its role as a sustainable tool, to fight against multidimensional poverty.

Our data shows that the fact that a member of the household is engaged in tourism is associated with an increase in the probability of rural households to escape from multidimensional extreme and moderate poverty. This supports previous research findings on the importance of tourism as a tool for community sustainable development and of well-being for communities. Specifically, evidence from this study shows that CBT is an effective sustainable tool of poverty reduction in rural households of developing countries which concentrate high levels of multidimensional poverty and multidimensional extreme poverty. The positive relationship between the two phenomena is possible because tourism provides opportunities to live a life of freedom that goes beyond income, under conditions of a well-developed governance model.

This research provides unprecedented information that can help in the company decisions and the design of national, regional and local public policies on multidimensional poverty and tourism, and in its monitoring. This is important because having the population classified according to categories of poverty makes it possible to have differentiated tourism policy instruments that serve society according to the depth of poverty. This information also contributes to ensure that decision-making in the tourism sector includes a social and human rights approach, by providing poverty estimates that incorporate these dimensions.

The study expands theoretical and methodological knowledge of CBT and its effects on the welfare of rural communities. Theoretical knowledge is improved because this research provides a conceptual model to analyze the relationship between implementing CBT and poverty reduction. This model can be tested in future research through a more in-depth literature review about sustainable tourism governance models and poverty in its multiple dimensions. In this sense, we could observe that governance mechanisms such as cooperation and coordination through the *tequio* or *faena*, the ease of access to cooperation networks in the community, and participation in the improvement of communal aspects associated with tourism, are components of the CBT that play an important role in the fight against multidimensional poverty. In terms of methodological contributions, the study uses an econometric model that considers the different categories of multidimensional poverty and its link with the CBT governance model. Thus, it set a precedent to boost more complex research, supported by other types of models and other databases, to strengthen future results.

Although one of the limitations of this article is that the findings only allow us to analyze the relationship between the implementation of the CBT and the multidimensional poverty reductions in rural households in Mexico from 2008 to 2018, the literature consulted allows us to reinforce the data and generate more robust arguments around the empirical results. We consider that these findings open a debate about a topic that should be analyzed in depth through quantitative and, above all, qualitative analyses that could give accurate results about the perception of poverty in the communities that implement the CBT.

Another limitation was, that we could not analyze the model at the regional level, because the databases used in this study were not designed to analyze tourism and, therefore, when reproducing the model at the local level, the number of observations is significantly reduced. Therefore, we must emphasize on the need of develop databases that give us more data about the contributions of the tourism sector to rural and urban well-being.

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Appendix 1.

Correlation Matrix for explanatory variables included in MNLM

Explanatory Variables	Sex of household head	Age of household head	Education of household head level 2	Education of household head level 3	Education of household head level 4	Education of household head level 5	Education of household head level 6	Tourism household	Community work	Community Based Tourism	Access to social networks	Agricultural household	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	
Sex of household head	1																		
Age of household head	-0.138	1																	
Education of household head level 2	-0.029	0.281	1																
Education of household head level 3	-0.001	0.016	-0.253	1															
Education of household head level 4	0.020	-0.249	-0.298	-0.322	1														
Education of household head level 5	0.039	-0.167	-0.162	-0.175	-0.205	1													
Education of household head level 6	0.040	-0.106	-0.193	-0.209	-0.245	-0.133	1												
Tourism household	0.022	-0.039	-0.048	0.003	0.050	0.038	-0.011	1											
Community work	0.025	-0.003	0.022	0.011	-0.030	-0.024	0.015	-0.006	1										
Community Based Tourism	0.016	-0.016	-0.019	0.008	0.016	0.011	-0.003	0.500	0.247	1									
Access to social networks	0.020	-0.001	-0.016	0.003	0.004	0.004	0.036	-0.001	0.051	0.012	1								
Agricultural household	0.140	0.055	0.191	0.048	-0.097	-0.110	-0.169	-0.103	0.026	-0.049	0.018	1							
Region 2	-0.007	-0.015	-0.027	-0.003	0.004	0.033	0.031	-0.010	-0.014	-0.008	0.035	-0.041	1						
Region 3	-0.007	0.014	0.021	0.004	-0.021	-0.011	-0.002	0.004	0.017	0.005	0.037	0.027	-0.146	1					
Region 4	-0.013	0.006	-0.043	0.017	0.018	-0.003	0.003	0.012	-0.001	0.006	-0.040	-0.062	-0.230	-0.216	1				
Region 5	-0.007	-0.002	0.015	-0.010	-0.011	0.018	-0.005	-0.008	0.004	-0.003	-0.015	0.011	-0.122	-0.115	-0.181	1			
Region 6	-0.003	0.005	0.046	-0.003	-0.064	-0.014	-0.035	0.001	0.029	0.008	-0.019	0.142	-0.123	-0.116	-0.182	-0.097	1		
Region 7	0.016	-0.036	0.011	-0.023	0.006	0.012	-0.003	0.063	0.008	0.031	-0.034	0.015	-0.124	-0.116	-0.183	-0.098	-0.098	1	

Note: All correlations are lower than 0.600.