

Tourism as a pathway to livelihood diversification: Evidence from biosphere reserves, Ethiopia

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ABSTRACT

This study aims at investigating the impact of tourism components on livelihood diversification outcomes or assets in Ethiopian biosphere reserves. A cross-sectional study was employed using descriptive and explanatory research design where a mixed research approach was used to collect data from a total of 305 multistage stratified random samples (rural and urban households). To meet the research objectives primary data sources (self-administered questionnaires, semi-structured interviews, observations) and secondary data sources were used. The hierarchical regression model was employed using SPSS version 23. The effect of each tourism component had varied effects on each livelihood outcomes and it was in favor of tourism enterprises than rural household's stratum. Integrated and diversified livelihood approaches should be the focus of policymakers and researchers that shall involve communities in the development process to make tourism as a pathway for livelihood diversification.

1. Introduction

Tourism is among the fastest-growing industries in terms of both income generation and job creation. The World Travel and Tourism Council 2019 report on travel and tourism impact exhibited that the share of tourism is for about 10.4% of global GDP and 319 million jobs (i.e. 10% of the total employment) globally (Sanjeev & Birdie, 2019). Tourism is the third-largest export category with international tourism receipts increased by 4.9% to reach US\$1340 billion in 2017 with 1326 million tourist arrivals and a 7% growth rate (UNWTO, 2018). Thus, sustainable tourism development in protected areas will be a viable option to put an end to serious problems, particularly in developing countries (Nthiga, Van der Duim, Visseren-Hamakers, & Lamers, 2015) to support people living with poverty (Bennett, Lemelin, Koster, & Budke, 2012; Tao & Wall, 2009b).

The concept of livelihood, on the other hand, refers to the capabilities, assets, and activities required for making a living and the sustainable livelihoods approach advances understanding of the livelihoods of the underprivileged communities (Serrat, 2017). Rural communities are highly dependent on traditional livelihood strategies such as agriculture, fishing, forestry, livestock rearing, and handicrafts. But sustainable livelihood requires diverse livelihood portfolios that are

recurrently observed as a determinant component of household economies in developing nations (Cinner & Bodin, 2010). Enhancing the livelihoods of unprivileged people requires various livelihood strategies that enable people to engage in various practices that would make life better which resembles the concept of livelihood diversification. Rural households, especially the underprivileged communities strive to cope up with vulnerabilities and crises using various forms of economic activities. Households need to diversify their livelihood through either structurally shifting their livelihood from on-farm to non-farm strategies (Start, 2001; Timmer, 2009) or employing a diverse multiplicity of livelihood portfolios regardless of their sector and location (Alobo Loison, 2015). Livelihood diversification is defined as "the process by which rural families construct a diverse portfolio of activities and social support capabilities in their struggle for survival and to improve their standards of living" (Ellis, 1998).

Sustainable livelihood framework emphasizes on the interests of the communities and identifies the intricacy of people's lives (Su et al., 2019). Tourism development influences those traditional livelihood strategies that possess a valuable share of the entire communities' wellbeing (Muresan et al., 2016; Su, Wall, & Jin, 2016). Conversely, tourism most often triggers the complete transformation of traditional livelihoods and fully dependent on tourism (Lasso & Dahles, 2018)

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despite its meaningful potential to reduce the gap between the underprivileged and the affluent people (Wu & Pearce, 2014). Various researchers also argue that managing tourism sustainably has the tremendous potential to provide infrastructure, financial and employment opportunities to the marginalized rural communities in developing countries (Sloan, Legrand, & Simons-Kaufmann, 2014). Besides, tourism is a major group of international trade in services that boasted virtually uninterrupted growth demonstrating the strength and resilience of the sector despite incidental shocks (UNWTO, 2017). This fact verifies that tourism can create jobs; the jobs that are created will increase incomes of a household which as a result will reduce household poverty which in turn will have a significant impact on livelihood options and tourism communities' income (Gartner & Cukier, 2012). It is truly found that tourism if promoted and enhanced, has an interesting significant impact on the people's livelihood due to the income generated from tourism activities and employment (Ahebwa, Aporu, & Nyakaana, 2016).

Ethiopian economy is highly dependent on agriculture still employing over 83% of the labour force contributing more than 34.9% of GDP in 2016/17 (NBE, 2017/18) from over 112 million population of the country (United Nations, 2019). It constitutes 80% of the export value (Shibru, Legesse, & Haji, 2017). A contribution of agriculture is still an important role player not only in the national economy of Ethiopia (Gebre-Selassie & Bekele, 2012; Shibru et al., 2017) but also in the livelihood and socio-cultural systems of the country even though a large number of people are still under poverty (Endalew, Muche, & Tadesse, 2015). Tourism's contribution to the GDP of Ethiopia was also contemplated by the world travel and tourism council showing continuously growing contribution. The travel and tourism sector has contributed 6.8% of GDP (USD 5074.3 million) in 2017 and is forecast to rise by 6.3% in 2018 and to rise by 5.2% per annum to (USD 8915.4 million), 6.1% of the GDP in 2028 (WTTC, 2018). Thus, tourism has long been considered to be a valuable catalyst in rural development and revitalization (Su et al., 2016).

Livelihood assets have a significant impact on livelihood options of income of tourism communities (Gartner & Cukier, 2012; Ma et al., 2018) beating spatial, location and physical settings have always been detrimental in seminal of economic activities, culture, and livelihood of people in rural areas in particular (Roy, 2013). The first and second growth and transformation plan of Ethiopia has mentioned tourism as a means to make people out of poverty (Kebede & Bayeh, 2017) though practically emphasized measures are yet to be taken. Tourism serves as a livelihood portfolio of diversification strategy complement rather than replacing existing livelihood sources that lead to strategies of livelihood diversification (Tao & Wall, 2009a). As also pinpointed by previous studies, tourism has the potential to increase the livelihood portfolio of communities through increment of additional livelihood option which in turn can increase extra income and other non-financial assets other than replacing traditional livelihood strategies (Kheiri & Nasihatkon, 2016; Muresan et al., 2016; Su et al., 2016, 2019).

Although the contribution of tourism for community development in general and community livelihood, in particular, has been investigated by previous researches, the measurement of its contribution for livelihood diversification outcome (i.e., quantitative measurement of tourism component-based impact on each of livelihood capitals/assets) remain untouched and yet to be studied. The four livelihood outcomes viz., economic, social, physical and institutional livelihood outcome have been selected for this research purpose because these outcomes are visibly impacted by tourism (Ashley, 2000; Shen, 2009; Su et al., 2019; Tao & Wall, 2009a, b; Zhang et al., 2019). Thus, the present research aims to analyze the contribution of tourism components be economic, socio-cultural, environmental and institutional on the four livelihood outcomes at the community level of rural household and tourism-related enterprises in Lake Tana Biosphere Reserve, one of UNESCO registered biosphere reserves in Ethiopia.

2. Tourism and livelihood diversification

The economic dependence of households merely on agriculture could be rhetoric because agricultural activities are subjected to various risks arising from rainfall aberrations, temperature fluctuations, hailstorms, cyclones and climate change (Shibru et al., 2017; Torell, McNally, Crawford, & Majubwa, 2017). Thus, the engagement of households in non-farm or off-farm livelihood economic activities such as tourism would be of a necessity than a choice. Moreover, the tourism industry is often considered less vulnerable than traditional sectors, it has less rigid socio-economic and gender barriers to entry than other industries (Muresan et al., 2016; Rogerson, 2004). Also, tourism may source traditional livelihoods to be dumped due to the greater and speedy cash flow (Mbaiwa, 2013). This is because it is usually based on natural and cultural resources and it is consumed on-site and has significant potential to render income-generating possibilities for local communities (Rogerson, 2004; Scheyvens & Russell, 2009). Therefore, due attention should be given to enhance the economic contribution of tourism and widen its role in the local economy, income, and employment as well as improvement of competitiveness of tourist destinations in Ethiopia (Farid, 2015).

In parallel, investigation of novel and innovative ways of marketing and promotion of tourism to devise ways on how to boost community involvement in planning, implementation and securing of benefits of tourism to allow advance in people's livelihood is vital (Ahebwa et al., 2016). The nexus between tourism and poverty alleviation through livelihood diversification is highly appreciated in many developing countries and rural communities in which tourism can potentially be among the means to be out of poverty (Harrison, 2014; Kebede & Bayeh, 2017; Rogerson, 2014). This nexus is sparked by an effective approach of pro-poor tourism (Kebede & Bayeh, 2017; Rogerson, 2014). The pro-poor tourism approach to tourism development has been praised as having the likely to reconfigure the various stakeholders are working together to guarantee tourism is delivering a larger share of metric benefits to poor (Mitchell & Ashley, 2009; Scheyvens & Russell, 2009).

3. Hypotheses

A general working hypothesis for this research was drawn and tested based on four sub-hypotheses to measure the effect of tourism on livelihood diversification. The general hypothesis of this study was; H_1 : Tourism and its dimensions have a significant effect on livelihood diversification.

The sub-hypotheses were formulated based on the works of literature and stated as follows.

Many of the previous studies have exhibited that tourism in developing countries recognizes and could use tourism as a tool to promote economic development (Tamene & Wondirad, 2019). Tourism doesn't exist in isolation and has connection related to other activities in and around protected areas where opportunities of tourism are unevenly distributed in which tourism is engaged in primarily for cash (Tao & Wall, 2009a). Besides, the relationship between tourism, environmental conservation, and community livelihood takes part in importantly for protected area sustainability (Zhang et al., 2019). Thus, tourism is also often considered as a device to alleviate poverty and improvement of socioeconomic conditions especially for rural communities of developing countries (Adiyia, Vanneste, Van Rompaey, & Ahebwa, 2014). Tourism can be used as a viable option for the benefits of the poor in generating the socioeconomic wellbeing of poor communities (Kebede & Bayeh, 2017). The economic contribution of tourism for livelihood diversification could be entitled to employments made directly in tourism businesses and both indirect and induced effects generated from the tourism industry (Adiyia et al., 2014; Donaldson, 2007). Based on these pieces of works of literature, connections between tourism with its dimensions were observed and the following hypothesis was drawn.

H1a. Economic, socio-cultural, environmental and institutional dimensions of tourism have a significant effect on economic livelihood diversification outcomes for both Rural Households and Tourism Enterprises and related organizations.

Tourism effect all aspects of livelihood assets for locals upon which people draw for the pursuit of livelihood objectives (Shen, 2009). Tourists' visitation to local communities to listen to locals' stories, myths, and attend festivals, dance, songs, rituals, customs and any aspect of local folklore to satisfy cultural demand of (eco)tourists which helps to improve socio-cultural significance of local communities which made residents perceive details of their culture as distinct (Lima & d'Hauterterre, 2011). Tourism development not only creates economic advancement but also valuable contributions to social development by creating social linkages of social capital such as human labour, bonding, and bridging (Guo, Zhang, Zhang, & Zheng, 2018). The effect of tourism development particularly in increasing social integration and enhancing the local culture to be promoted and cultural products to be presented in the market which could also, in turn, enhance not only an economic livelihood but also social capital (Lasso & Dahles, 2018). Moreover, tourism activities could benefit the social livelihood capital in terms of strong social organization for the successful management of tourism though conflicts over-tourism among locals might be a bottleneck (Ashley, 2000). People who come as tourists in host destinations and share time and space with locals, lifestyle and their environment providing rural communities enhanced feelings of social ascension and importance which enhance both social and human capital (Lima & d'Hauterterre, 2011). Local traditions, culture, and conservation practices are not yet included as livelihood strategies of communities in many developing countries where these could be promoted for tourism where the later can serve as an alternative livelihood for some residents to be integrated with household's livelihood portfolio (Su, Sun, Min, & Jiao, 2018). Tourism can enhance social capital in various ways which may be through increasing social cohesion helping communities to take joint action in tourism, helping in organizational strength and capacitating management skills of community organizations as well as tourism increase in communities' recognition from, and links with, the external world (Ashley, 2000; Stone, 2015). The above studies indicate the significant relationship between tourism measured in terms of its components and social capital of livelihood diversification. The need for the development of alternative livelihood diversification seeks to alleviate the conflict between local livelihoods and protected areas where tourism could be a viable livelihood choice for strong integration making locals part of the development (Goodwin & Roe, 2001).

H1b. Economic, socio-cultural, environmental and institutional dimensions of tourism have a significant effect on social livelihood diversification outcomes for both Rural Households and Tourism Enterprises and related organizations.

Physical capital is the development of different infrastructures such as road, home, and production assets (Takenaka & Pren, 2010). Besides, the economic gain from protected areas will help people move to self-finance assets such as business, truck, harvesting equipment which enhances the physical capital of livelihood diversification (Nawrotzki, Hunter, & Dickinson, 2012). Tourism impacts not only on the economy and socio-cultural structure of a certain community of an area but also on its environment (Farsani, Coelho, & Costa, 2011; Janusz & Bajdor, 2013). The impacts the tourism and its various dimensional impacts on livelihood diversification other than the economic impact are difficult to measure through monetary yardsticks (Aggarwal & Tiwari, 2014). Tourism as an industry has a multitude of benefits for the local communities in various aspects from which the tourism earnings can be reinvested in various physical assets that might include livestock and agriculture (Ashley, 2000).

H1c. Economic, socio-cultural, environmental and institutional dimensions of tourism have a significant effect on physical livelihood diversification outcomes for both Rural Households and Tourism

Enterprises and related organizations.

Institutional capital as a livelihood diversification outcome could be enhanced through tourism. Access to tourist markets, access, and participation in the policymaking process, tourism benefit sharing as well as the extent of people's willingness to be involved in various political decisions for the achievement of better livelihood outcomes (Shen, 2009). Tourism development policies that help for the development of various tourism institutions such as recreational sites, tour rendering organizations such as tour and travel agencies which in turn could help locals in creating job opportunities and access to tourist markets, development of infrastructure and social cohesion (Lee, 2008; Murphy, 2012; Swanson & Edgell Sr, 2013). Tourism provides not only access to tourist markets, tourist facilities and services (Musa, Thirumoorthi, & Doshi, 2012; Shen, 2009; Singh, 2013) but also provides opportunities for local farmers and tourists where farmers can sell products directly to final customers i.e., tourists (Lee, 2008; Rogerson, 2012). Tourism development not only recognizes peoples' right to their traditional practice but it also enables local communities to have access for equitable participation of land and tourism management and planning, increased management and control, recognize political history and supports locals legal title of owning land and other properties (Bennett & Dearden, 2014; Bennett et al., 2012). Local communities could be benefited from participating in varied tourism arrangements classified based on the ownership structure of operating tourism enterprise and land tenure rights of development areas where tourism operation takes place (Lapeyre, 2011).

H1d. Economic, socio-cultural, environmental and institutional dimensions of tourism have a significant effect on institutional livelihood diversification outcomes for both Rural Households and Tourism Enterprises and related organizations.

Tourism becomes known as an alternative livelihood to some residents that put forth positive economic influence (Su et al., 2018). Livelihood security is an ultimate objective that is not limited to financial or economic capital but also includes social, physical, natural and human capital (Scoones, 1998) with which tourism can be a livelihood diversification strategy (Goodwin & Roe, 2001). Tourism impacts such as environmental dimensions depend on the interaction of tourism development type, socioeconomic and various characteristics of tourists and the natural, socio-economic and institutional characteristics of host areas that in turn enhance livelihood (Briassoulis & Straaten, 2000). Even though there are conditions where formal and informal institutions came in conflict, frictions in loopholes of institutions of tourism, norm, and tourism accommodation could enhance sustainable development including sustainable development of tourism that needs the synergy of formal and informal institutions (Jiang, Zhuo, Zhang, & Gao, 2019). Tourism's environmental impacts originate in various economic and informal sectors as well as tourism activities of the host population such as service, entertainment, and shopping (Briassoulis & Straaten, 2000).

H1e. Economic, socio-cultural, environmental and institutional dimensions of tourism have a significant effect on the livelihood diversification outcomes for both Rural Households and Tourism Enterprises and related organizations.

4. Materials and methods

4.1. Description of the study area

Lake Tana is Ethiopia's largest lake possessing half of the nation's freshwater and the source of the Blue Nile supporting the lives of hundreds of millions in the Nile Basin (Goshu & Aynalem, 2017). It is the home of 37 islands and sacred monasteries located in North-Western Ethiopian Highlands in the Amhara National Regional State between the geographic coordinates of 10°58' 12'47"N latitude and 36°45'-38'14' E longitude with its surface area ranges from 3000 to 3500 km² depending on season and rainfall (Admas, Sahle, Belete,

Agidie, & Alebachew, 2017). Lake Tana Biosphere Reserve, registered in 2015, is among the fourth UNESCO world biosphere reserve sites of Ethiopia (Worku, 2017).

4.2. Research methodology

A cross-sectional study employing both descriptive and explanatory design was used. A mixed research approach was entertained where the qualitative analysis was used to describe data obtained through observation and unstructured interviews and for triangulation of the quantitative data. Multi-stage stratified random sampling for self-administered survey questionnaires and judgmental purposive sampling for the selection of respondents for interview and sample sites were used.

Stratification of the respondents was based on the variables: main means of livelihood strategy or economic activity, residence area (rural or urban), expected and perceived knowledge of respondents about the environment, lifestyle and expected income difference. The two strata were: Rural Households (HHs) stratum which consists of mainly rural residents dependent on farming, non-timber forest production, sale of firewood, fishing activities and members of farmer's associations such as unions who are entirely rural, and Tourism enterprises and related organizations (TEs) stratum that consists of enterprises who are working in tourism and related services such as production and sale of fish products, souvenir shops, boating and guiding associations, employees in hotels, restaurants, travel agencies and tour operation companies, hotels and hoteliers as well as employees in tourism and environment-related government and private organizations.

The samples were drawn from the 6000 household population (ANRS BoFED, 2018) taken from 6 sites (Bahir Dar, Zeghe Peninsula, Kunzila, Gorgora, Yifag, Woyna) purposively selected. The rationale behind the selection of sample areas include availability of tourism activities and tourist flows, status of water hyacinth (i.e., invasive species affecting both tourism and livelihood practices), existence of relatively better economic practices undertaken in the biosphere, and direct access to the lake with better transportation access to shore of the lake. Subjects were selected based on their responsibility related to the biosphere reserve, engagement in activities on the lake, and the biosphere ecosystem and relative direct livelihood attachment to the biosphere. The sample size was determined based on (Yamane, 1967) sampling technique. The sample size was 374 and 10% (37) were also added to reduce the non-response rate. A total of 375 questionnaires were returned and 70 were excluded from analysis due to invalid responses. Thus, a total of 305 respondents based on the proportion (159 from rural households and 146 from tourism enterprises and related organizations) were used for quantitative analysis.

Data were collected from September 2017 to June 2018 for 10 months. Data collection was made by the corresponding author. Assistant data collectors were employed to accompany the researcher from Kunzila, Gorgora and Woyna sample sites where the researcher has little awareness about the sampled area. Data were collected on a five-point Likert scale for the two constructs (tourism and livelihood diversification) based on their respective dimensions and outcomes respectively, viz., economic, socio-cultural, environmental and institutional dimensions for Tourism (Tour) whereas Economic, Social, Physical and Institutional Livelihood outcomes for Livelihood diversification (LD). The five-point Likert scale was prepared and consists from strongly disagree to strongly agree with intermediate or neutral answer options in between positive and negative answers ranging from "1" for strongly disagree and "5" for strongly agree. This kind of scale is also a recommendation of scholars such as (Grassi et al., 2007). Descriptive analysis was computed to present the demographic characteristics of respondents. Hierarchical regression analysis was employed to measure the impact of tourism dimensions on livelihood diversification outcomes and livelihood diversification construct.

4.3. Reliability and validity

Validity was checked consulting five professionals from disciplines related to the present study and the research supervisor by which the instruments were not merely developed by the researcher though. A portion of instruments was also adopted from a standardized questionnaire. The reliability of the items was measured employing 10% of the total sample i.e., 37 out of 374 sample respondents in a pilot test. Then, minor editions were made for the sake of clarity and preciseness of the items. Reliability of the survey instruments estimated based on the Cronbach's alpha value for various items varied from 0.749 to 0.930 and inter-item correlation $r > or = .30$, were found to be acceptable based on (Tavakol & Dennick, 2011; Wells & Wollack, 2003) measure of internal consistency (Table 1).

5. Results

5.1. Characterization of the sample

Of 159 respondents from a rural household stratum, 71.3% of respondents were male and 28.3% were females where the majority of them found in the young age category (18–34) with 67.3% followed by age group 35–49 years that account 23.3%. Based on education level, 29.6% were secondary school (10th grade) complete followed by elementary education (8th grade) (22%). The majority of the respondents were married (45.3%) with the smallest household size (1–3 members) which was about 43.4% followed by 4–6 members (38.4%). The rest of the respondents were unmarried. In the rural HHs stratum, 50 (31%) of respondents engaged in farming whereas 30 (18.9%), 29 (18.2%), 27 (17.0), 10 (6.2%) engaged in fishing, trade, production, and sale of handicrafts and wage as major means of livelihood respectively. The rest were found engaging in wages, wood and wood products, animal rearing and beekeeping. Majority of respondents earn less than 10,000 (ETB) average income which accounts for 88 (55.3%) followed by those who earn net average annual income between 10,001 and 25,000 (52; 32.7%) and 25,001–40,000 (11; 6.9%). The rest few of respondents fall in categories of higher than 40,000 birr of net annual income.

Out of 146 respondents from the TEs stratum 60.3% and 39.7% were male and female respectively. The majority of respondents were found in the young age category (18–34) with 76.7% followed by the adult age group (35–49) which accounts for 17.1% of TEs stratum respondents. 34.2% of respondents from TEs stratum were secondary complete or having a certificate/diploma. This is followed by a university degree (24.7%) for TEs stratum respondents. 43.2% of the respondents were married with a household size of 1–3 members (48.6%) followed by 4–6 members (15.7%) and 7–10 members (9.6%). The rest were found unmarried. The major source of income for respondents' households was salary i.e., 71 (48.6%) followed by tourism and hospitality (34 or 23.3%) and trade (25 or 17.1%). The rest of the respondents were engaged in fishing that accounts for 10 or 6.8% and wage in the travel and tourism industry which accounts for 6(4.1%). majority of respondents earn less than 10,000 (ETB) average income which accounts 71 (48.6%) followed by those who earn net average annual income between 10,001 and 25,000 (48; 32.9%) and 25,001–40,000 (18; 12.3%). The remaining few of respondents fall in categories of higher than 40,000 birr of net annual income.

The younger the age of the population, the more the people to engage in tourism as far as tourism is labour intensive which requires youngsters who are well trained, flexible and energetic. The more people are educated, the higher the probability of people to engage in tourism livelihood. In both strata, households who are married need to diversify their livelihoods which could also be influenced by large household size. Inadequate livelihood income will motivate households to seek a strategy for the diversification of livelihood to earn more income, better infrastructure, facilities and services, and look for enhanced institutions

Table 1
Cronbach’s alpha of tourism and livelihood diversification dimensions for reliability analysis.

Reliability analysis/person correlation r	Tourism Dimensions (Tour)				Livelihood Diversification (LD) Outcomes			
	Economic	Socio-cultural	Environmental	Institutional	Economic	Social	Physical	Institutional
Label	Tour _{Eco}	Tour _{Soc}	Tour _{Env}	Tour _{Inst}	Econ _{LD}	Soc _{LD}	Phy _{LD}	Inst _{LD}
Alpha before deleting	.847	.804	.712	.875	.872	.782	.700	.790
Alpha after deleting	.930	.804	.749	.875	.872	.780	.771	.769
No. of items deleted	1	–	1	–	1	1	3	1
Total no. of items tested	5	4	5	3	8	7	6	6

Note: The inter-item correlation taken was an alpha value greater than 0.30.

Hint: Tour_{Eco}, Tour_{Soc}, Tour_{Env}, and Tour_{Inst} are economic, socio-cultural, environmental and institutional dimensions of tourism. Econ_{LD}, Soc_{LD}, Phy_{LD}, and Inst_{LD} are the economic, social, physical and institutional livelihood outcomes of diversification.

Bold values signify Acceptable Cronbach Alpha for reliability analysis.

Source: Filed Survey, 2018

for better livelihood status. Little engagement in tourism but higher existing potentials of the sector could also attract peoples’ demand to engage in tourism.

5.2. Assumptions for multiple (hierarchical) linear regressions

1. The relationship between the independent variables and dependent variables is linear. This assumption was confirmed as reflected by the scatter plot/dot options that show the relationship is linear for all independent variables: economic, social, physical, institutional and total livelihood diversification for both HHs and TEs strata (refer to Figs. 1–4).
2. There is no multicollinearity in the data set. Multicollinearity exists when the correlation coefficient r is above 0.80. Hence, environmental dimensions of tourism were found multicollinear with institutional dimensions for HHs (r = .894) and with social dimensions (r = .933) for TEs. To solve this problem the variable with a small correlation with the DV was removed from the hierarchical regression models for each DV (P. Vatcheva & Lee, 2016).
3. The values of the residuals are independent. The residuals of the data set in sample stratum found independent or uncorrelated which can also be tested based on Durbin-Watson statistics i.e., above 1 and below 3. Hence, the Durbin-Watson statistics is about 1.510 and 1.562 for Econ_{LD}, 1.483 and 1.624 for Soc_{LD}, 1.555 and 1.954 for Phy_{LD}, and 1.667 and 1.748 for Inst_{LD} for the rural households and tourism enterprises and related organizations stratum respectively that conveyed residuals are independent (see Table 3 and Table 5). Thus, this assumption is met for each of the regression model (see Table 6).
4. The assumption of homoscedasticity; the assumption that shows the variation in the residuals is similar or constant at each point of the model. This can be shown by the normality probability curve of the

scatter plot. And, the plot meets the assumption of homoscedasticity for Econ_{LD}, Soc_{LD}, Phy_{LD}, and Inst_{LD} (Figs. 1–4).

5. The values of the residuals are normally distributed. This assumption can be tested by looking at the P–P plot for the model. The closer the dots lie to the diagonal line, the closer to normal the residuals are distributed. The normal p-p plot dots line indicates that the assumption of normality has not been violated (Figs. 5–8).
- 6 No influential cases or outliers are biasing the model. The common rule of thumb for Cook’s Distance states that observation with the value of Cook’s D over 1.0 has too much influence (Rule of Thumb). Thus, Cook’s Distance D values were not greater than 1.0, suggesting individual cases was not unduly influencing the model. In these two models for HHs, Cook’s Distance values were found.091, 0.085, 0.078 and 0.115 for Econ_{LD}, Soc_{LD}, Phy_{LD}, and Inst_{LD} for rural households respectively which are both below 1 that conveyed as there are no outliers. The Cook’s Distance for Tourism enterprises and related organizations (TEs) stratum were found to be 0.049, 0.072, 0.072 and 0.053 for Econ_{LD}, Soc_{LD}, Phy_{LD}, and Inst_{LD} respectively which are less than 1.0 that conveyed as there are no outliers.

5.3. Regression analysis results

The hierarchical regression model was employed to analyze the impact of tourism on livelihood diversification based on the components and livelihood outcomes because it helps to exclude the insignificant variables in the regression model (King, 2003). This research used cut-off points for making decisions to conclude for both strata i.e., rural households and tourism enterprises and related organizations. Hence, The Durbin-Watson test for assumption of outliers of residuals proved as there is no outlier which is above 1.20 and lower than 2.00 according to (King & Evans, 1985).

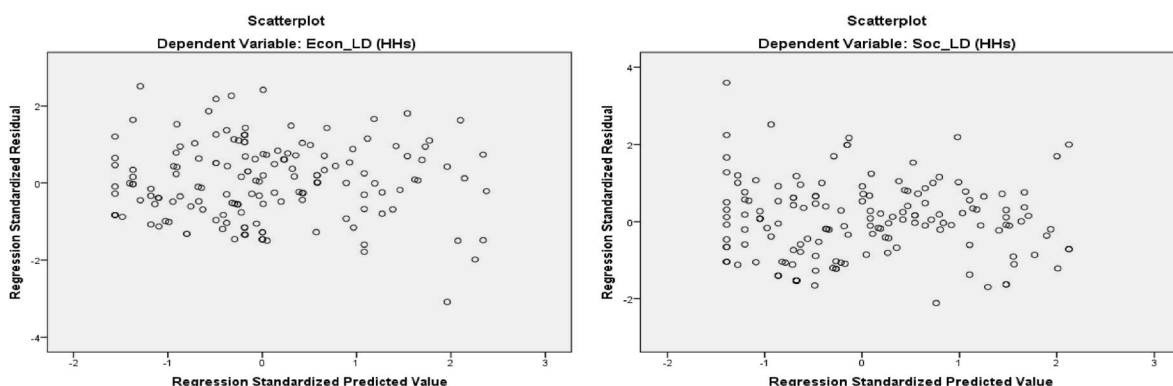


Fig. 1. Scatter Plot representing Homoscedasticity: Econ_{LD} and Soc_{LD} (HHs).

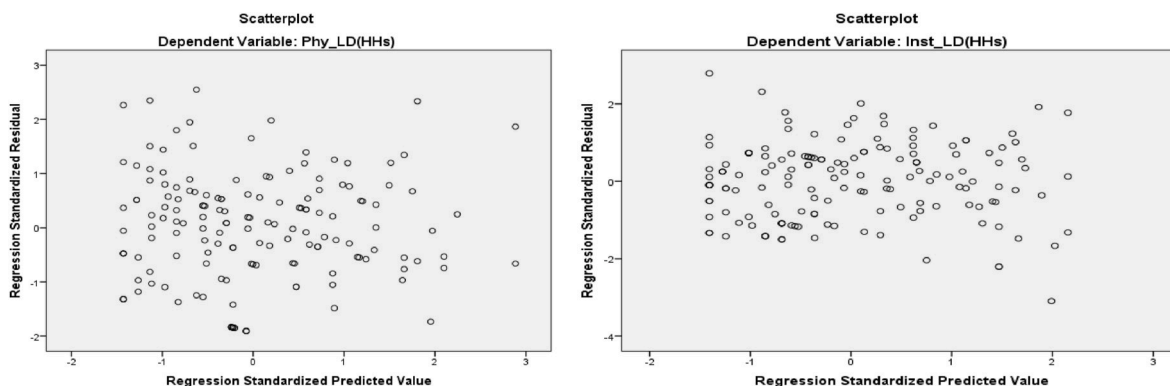


Fig. 2. Scatter Plot representing Homoscedasticity: Phy_{LD} and Inst_{LD} (HHs).

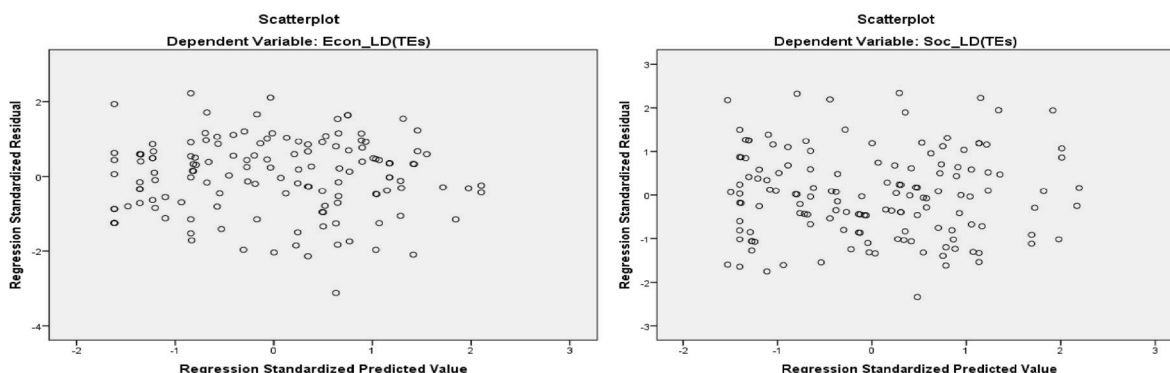


Fig. 3. Scatter Plot representing Homoscedasticity: Econ_{LD} and Soc_{LD} (TEs).

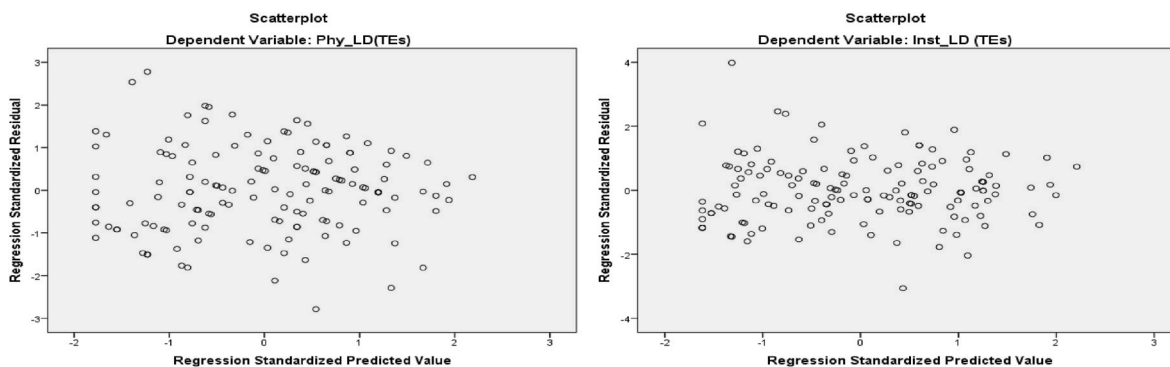


Fig. 4. Scatter Plot representing Homoscedasticity: Phy_{LD} and Inst_{LD} (TEs).

5.3.1. Rural households

The model summary table that shows the percentage of variance explained in the dependent variable revealed the economic and social dimensions of tourism benefits have explained .285 (28.5%) of the variance in the dependent variable i.e., economic livelihood outcome seeking improved wellbeing of the households. Institutional and economic dimensions explain the 30.5% of variance explained in Social livelihood outcomes. Whereas the social and institutional tourism dimensions predict 14.9% of variance explained in the physical livelihood outcome. The economic and institutional tourism dimensions reflect the significant variance explained in institutional livelihood outcome that accounts for 20.3% of the variance. Moreover, the sum of the mean of each livelihood outcome was labelled as livelihood diversification and the model summary exhibited 34.1% of its variance is explained by institutional, economic and social dimensions of tourism respectively.

The hierarchical regression retains only the socio-cultural and

economic dimensions of tourism explaining significant variance in the economic livelihood outcome of diversification. The social livelihood outcome regression model retains institutional and economic dimensions only as significant predictors. Moreover, the only significant predictors were socio-cultural and institutional dimensions of tourism in the physical livelihood outcome regression model. The economic and institutional tourism dimensions were found significant predictors for institutional livelihood outcomes whereas institutional, economic and social tourism dimensions were the significant predictors for aggregate livelihood diversification construct where environmental dimension was removed from the model due to multicollinearity problem.

Finally, the final regression models are;

$$Econ_{LD_{HHs}} = 1.110 + .377(Tour_{Soc}) + .154(Tour_{Eco}) \tag{1}$$

$$Soc_{LD_{HHs}} = 1.263 + .281(Tom_{Inst}) + .228(Tom_{Eco}) \tag{2}$$

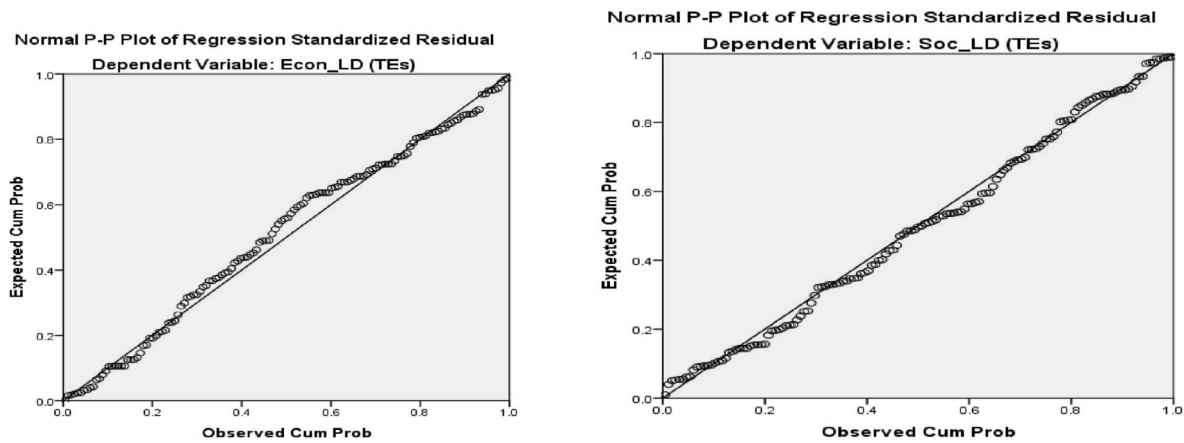


Fig. 5. Linearity of Normal P_P plot of residuals: Econ_{LD} & Soc_{LD} (TEs).

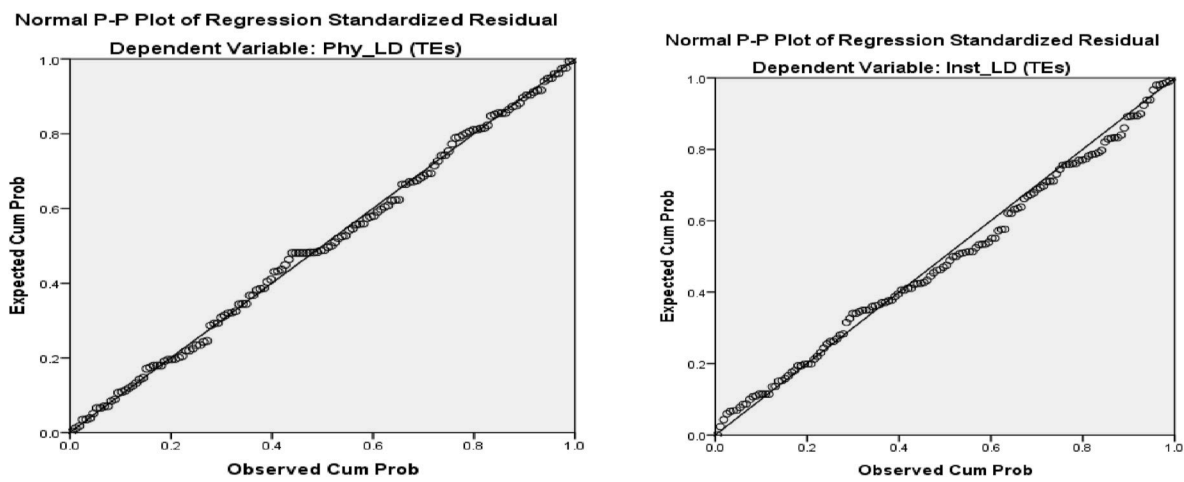


Fig. 6. Linearity of Normal P_P plot of residuals: Phy_{LD} & Inst_{LD} (TEs).

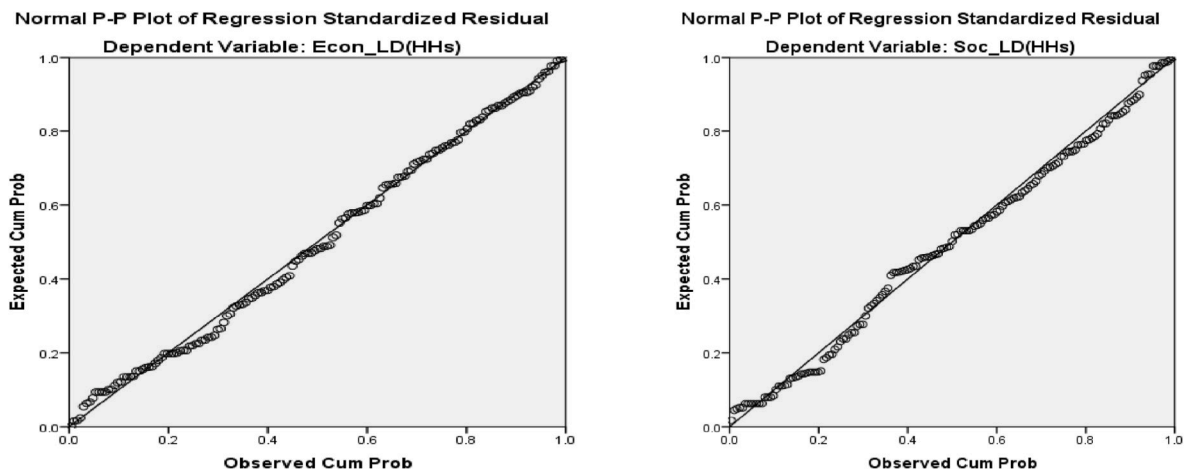


Fig. 7. Linearity of Normal P_P plot of residuals: Econ_{LD} & Soc_{LD} (HHs).

$$\text{Phy}_{LD\text{HHs}} = 1.673 + .201(\text{Tom}_{\text{Soc}}) + .169(\text{Tom}_{\text{Inst}}) \quad (3)$$

$$\text{Inst}_{LD\text{HHs}} = 1.655 + .218(\text{Tom}_{\text{Eco}}) + .206(\text{Tom}_{\text{Inst}}) \quad (4)$$

$$\text{LD}_{\text{HHs}} = 1.349 + .169(\text{Tom}_{\text{Inst}}) + .168(\text{Tom}_{\text{Eco}}) + .151(\text{Tom}_{\text{Soc}}) \quad (5)$$

The finding from the regression output revealed that the collinearity

diagnostics test from the coefficient table of the hierarchical regression output. It was checked by the tolerance level between less than 0.90 and greater than 0.20 which shows that there is no any multi-collinearity problem accompanied by VIF statistics which greater than 1 (King, 2003) as shown in the table below.

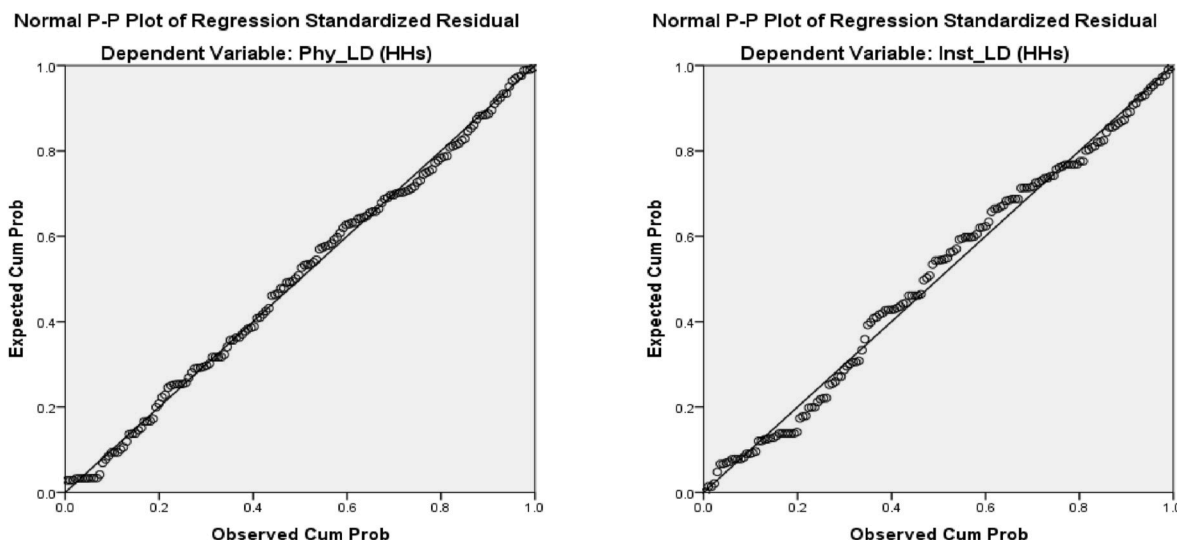


Fig. 8. Linearity of Normal P_P plot of residuals: Phy_{LD} & Inst_{LD} (HHs).

5.3.2. Tourism enterprises and related organizations

The model summary table revealed the economic and institutional dimensions of tourism that explained .407 (40.7%) of the variance in the economic livelihood outcome. Only institutional tourism dimension exhibit the 10.3% of variance explained in social livelihood outcome. The environmental and economical tourism dimensions predict the 33.7% of variance explained in the physical livelihood outcome, and the institutional, economic and environmental tourism dimensions reflect the significant variance explained that accounts 45.3% of variance explained in institutional livelihood outcome. Moreover, the sum of the mean of each livelihood outcome was labelled as livelihood diversification and 46.3% of its variance is explained by institutional and economic dimensions where the environmental tourism dimension failed to explain the mean scored livelihood diversification construct (Table 4).

The hierarchical regression model revealed only the economic and institutional dimensions of tourism explaining significant variance in economic livelihood outcome of diversification each with beta coefficients 0.330 and 0.264 respectively. For social livelihood outcomes, the model retains only institutional tourism dimensions with B = .226 as the significant predictor whereas, for the physical livelihood outcome model, the only significant predictors were environmental (B = .367) and economic (B = .301) dimensions of tourism. The institutional (B = .320), economic (B = .124) and environmental (B = .204) tourism dimensions were found significant predictors for institutional livelihood outcome. Furthermore, institutional and economic tourism dimensions were the significant predictors for total aggregate livelihood diversification with a B value of 0.270 and 0.255 respectively where social dimension was removed from the model due to multicollinearity (Table 5).

The final hierarchical regression model for TEs;

$$Econ_{LD_{TEs}} = 1.357 + .330(Tom_{Eco}) + .264(Tom_{Inst}) \tag{6}$$

$$Soc_{LD_{TEs}} = 2.142 + .226(Tom_{Inst}) \tag{7}$$

$$Phy_{LD_{TEs}} = 1.372 + .367(Tom_{Env}) + .301(Tom_{Econ}) \tag{8}$$

$$Inst_{LD_{TEs}} = 1.215 + .320(Tom_{Inst}) + .124(Tom_{Eco}) + .204(Tom_{Env}) \tag{9}$$

$$LD_{TEs} = 1.546 + .270(Tom_{Inst}) + .255(Tom_{Eco}) \tag{10}$$

5.4. Results of hypothesis testing (HHs + TEs)

6. Discussion

6.1. The impact of tourism components on livelihood diversification assets

The present study conducted on Lake Tana Biosphere Reserve analyzed the impact of each of the tourism components' (economic, socio-cultural, environmental and institutional) impact on each of the livelihood capitals (economic, social, physical, institutional) and livelihood diversification construct that can be replicated and results could be distributed to other similar areas. Hence, this study revealed that livelihood diversification outcomes are impacted significantly by varied tourism impact dimensions though their level of contribution is different.

6.1.1. The impact of tourism components on economic livelihood diversification assets

For the rural households, the socio-cultural (B = .377) and economic (B = .154) aspects of tourism impact indicators were found significantly affecting the economic livelihood outcome with 28.5% of variance predicted (Table 2 & Table 3). This study portrays economic (B = .330) and institutional (B = .264) components of tourism significantly predict the economic livelihood outcome for about 40.7% of the prediction for Tourism enterprises and related organizations stratum (Table 4 & Table 5). The present study finding is supported by the study that revealed the role of tourism in many developing countries to reduce poverty was found to be significant in different developing countries. This similar result was revealed in the study of Croes (2014), that found the contribution of tourism to Ethiopian GDP was found 4.3% in from

Table 2 Model summary of variance explained for livelihood by tourism (HHs).

DV	Model Summary ^b					
	Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
Econ _{LD}	2	.542 ^a	.294	.285	.773	1.510
Soc _{LD}	2	.563 ^a	.316	.308	.738	1.483
Phy _{LD}	2	.400 ^a	.160	.149	.791	1.555
Inst _{LD}	2	.462 ^a	.213	.203	.808	1.667
LD	3	.595 ^b	.354	.341	.60646	1.409

Bold values signify Acceptable Cronbach Alpha for reliability analysis.

^a Predictors: (Constant), Tom_{Soc}, Tom_{Eco}, Tom_{Inst}.

^b Dependent Variable: Econ_{LD}, Soc_{LD}, Phy_{LD}, Inst_{LD}, LD.

Source: Filed Survey, 2017/18

Table 3
Coefficients of determination for impact of tourism on livelihood (HHs).

Coefficients ^a		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics		
Model		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF	
Econ _{LD}	2	(Constant)	1.110	.173		6.410	.000	.768	1.452		
		Tom _{Soc}	.377	.075	.404	4.992	.000	.228	.526	.690	1.449
		Tom _{Eco}	.154	.062	.201	2.477	.014	.031	.276	.690	1.449
Soc _{LD}	2	(Constant)	1.263	.154		8.220	.000	.960	1.567		
		Tom _{Inst}	.281	.062	.345	4.550	.000	.159	.402	.762	1.312
		Tom _{Eco}	.228	.056	.307	4.049	.000	.117	.339	.762	1.312
Phy _{LD}	2	(Constant)	1.673	.173		9.670	.000	1.331	2.015		
		Tom _{Soc}	.201	.083	.229	2.425	.016	.037	.364	.609	1.642
		Tom _{Inst}	.169	.074	.215	2.283	.024	.023	.316	.609	1.642
Inst _{LD}	2	(Constant)	1.655	.168		9.838	.000	1.323	1.988		
		Tom _{Eco}	.218	.062	.288	3.536	.001	.096	.340	.762	1.312
		Tom _{Inst}	.206	.068	.248	3.044	.003	.072	.339	.762	1.312
LD	3	(Constant)	1.349	.139		9.715	.000	1.075	1.623		
		Tom _{Inst}	.169	.058	.246	2.900	.004	.054	.284	.582	1.719
		Tom _{Eco}	.168	.050	.268	3.372	.001	.070	.267	.665	1.504
		Tom _{Soc}	.151	.068	.197	2.213	.028	.016	.286	.528	1.894

^a Dependent Variable: Econ_{LD}, Soc_{LD}, Phy_{LD}, Inst_{LD}, LD.
Source: Filed Survey, 2017/18

Table 4
Model summary of variance explained for livelihood by tourism (TEs).

DV	Model Summary ^c					
	Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
Econ _{LD}	2	.644 ^b	.415	.407	.763	1.562
Soc _{LD}	1	.331 ^a	.109	.103	.796	1.624
Phy _{LD}	2	.589 ^b	.347	.337	.934	1.954
Inst _{LD}	3	.682 ^c	.465	.453	.736	1.748
LD	2	.686 ^b	.470	.463	.604	1.650

^a Predictors: (Constant), Tom_{Env}, Tom_{Eco}, Tom_{Inst}.
^b Dependent Variable: Econ_{LD}, Soc_{LD}, Phy_{LD}, Inst_{LD}, LD.
Source: Filed Survey, 2017/18

which significant portion of income had been expected to be redistributed to the poor in various ways.

The impact of tourism is mainly pinpointed by its economic contributions that most visibly devise the communities and other stakeholders to engage in tourism due to its tremendous socio-cultural, economic, and natural or physical livelihood impacts. The present study also aligned to

Table 5
Coefficients of determination for impact of tourism on livelihood (TEs).

Coefficients ^a		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics		
Model		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF	
Econ _{LD}	2	(Constant)	1.357	.176		7.697	.000	1.009	1.706		
		Tom _{Eco}	.330	.066	.397	4.986	.000	.199	.461	.664	1.506
		Tom _{Inst}	.264	.064	.327	4.112	.000	.137	.391	.664	1.506
Soc _{LD}	1	(Constant)	2.142	.154		13.882	.000	1.837	2.448		
		Tom _{Inst}	.226	.054	.331	4.158	.000	.119	.333	1.000	1.000
Phy _{LD}	2	(Constant)	1.372	.232		5.909	.000	.913	1.831		
		Tom _{Env}	.367	.108	.326	3.405	.001	.154	.580	.513	1.948
		Tom _{Eco}	.301	.092	.313	3.275	.001	.119	.483	.513	1.948
Inst _{LD}	3	(Constant)	1.215	.180		6.762	.000	.859	1.570		
		Tom _{Inst}	.320	.074	.395	4.311	.000	.173	.467	.458	2.184
		Tom _{Eco}	.124	.047	.197	2.634	.009	.031	.217	.691	1.446
		Tom _{Env}	.204	.100	.209	2.047	.043	.007	.402	.371	2.696
LD	2	(Constant)	1.546	.140		11.073	.000	1.270	1.822		
		Tom _{Inst}	.270	.051	.403	5.319	.000	.170	.371	.664	1.506
		Tom _{Eco}	.255	.052	.369	4.865	.000	.151	.358	.664	1.506

^a Dependent Variable: Econ_{LD}, Soc_{LD}, Phy_{LD}, Inst_{LD}, LD.
Source: Filed Survey, 2017/18

the study that portrayed the impact of tourism for various aspects of community' benefits in China has revealed various dimensional impacts of tourism (Li, 2002) that play valuable role for communities at the local level (Tamene & Wondirad, 2019). In terms of economic livelihood outcomes for households, tourism employment generates low levels of income compared to alternative off-farm activities that enable households to strengthen livelihood strategies by investments in on-farm or alternative off-farm activities (Adiyia, Vanneste, & Van Rompaey, 2017). But, the role of tourism to local communities and enterprises development has a higher potential in the global scenario where there is higher mobility, a curiosity of new culture, knowledge, and society has increased, and travel formalities have become deduced. The role of community-based tourism enterprises for poverty reductions accelerates the investments in various to improve community livelihoods (Manyara & Jones, 2007). The welfare of households would be higher for those who engaged and diversify in tourism and other off-farm livelihood strategies (Adiyia et al., 2017; Su et al., 2019).

6.1.2. The impact of tourism components on social livelihood diversification assets

The impact of tourism on the social livelihood outcome for the rural

Table 6
Decisions on hypotheses testing (HHs and TEs).

Hypothesis	Independent Variable	Dependent variable											
		Econ _{LD}			Soc _{LD}			Phy _{LD}			Inst _{LD}		
		B	Sig.	Decn	B	Sig.	Decn	B	Sig.	Decn	B	Sig.	Decn
Rural Households (HHs) Stratum													
H _{4a}	Tom _{Eco}	.154	.014	S	.228	.000	S			NS	.218	.001	S
H _{4b}	Tom _{Soc}	.377	.000	S			NS	.201	.016	S			NS
H _{4c}	Tom _{Env}			NS			NS			NS			NS
H _{4d}	Tom _{Inst}			NS	.281	.000	S	.169	.024	S	.206	.003	S
Tourism Enterprises and Related Organizations (TEs) stratum													
H _{4e}	Tom _{Eco}	.330	.000	S			NS	.301	.001	S	.124	.009	S
H _{4f}	Tom _{Soc}			NS			NS			NS			NS
H _{4g}	Tom _{Env}			NS			NS	.367	.001	S	.204	.043	S
H _{4h}	Tom _{Inst}	.264	.000	S	.226	.000	S			NS	.320	.000	S

Bold values signify Acceptable Cronbach Alpha for reliability analysis.
Source: Filed Survey, 2017/18 (Hint: S= Supported, NS= Not Supported)

households found the institutional factors (B = .281) and economic factors (B = .228) of tourism as significant indicators of livelihood whereas only institutional component of tourism (B = .226) coefficient of hierarchical regression parameter yields for a 10.3% of variance explained in social livelihood outcome for the Tourism enterprises and related organizations households (TEs) (Table 2 & Table 3; Table 4 & Table 5). The socioeconomic impacts of tourism have played a significant role in the majority of people living in highly populated rural communities but impacts are substantial for a few people who directly benefit (Spenceley & Goodwin, 2007).

Besides, the social livelihood outcome result revealed tourism has become the major livelihood strategy of Yuanjia Village, China (Gao & Wu, 2017) in which tourism has brought impacts on production activities, material lifestyle, household income, and job satisfaction (León, 2007). Moreover, Su, Aaron, et al. (2019) and Su, Wall, et al. (2019) identified tourism supports high recognition of positive impacts on living standards and local pride which enhances the social livelihood capital. These previous studies' findings have a strong linkage with the current study with which tourism in general and component impacts specifically have a valuable role to the social ties, socio-cultural exchange, and integration. Furthermore, the tourism induced growth supports tourism-induced human capital development and human capital development-induced growth also supports the valuable contribution of tourism in supporting the social capital (Fahimi, Akadiri, Seraj, & Akadiri, 2018; Su et al., 2019) in line with the present study.

6.1.3. The impact of tourism components on physical livelihood diversification assets

The enhancement of the physical livelihood outcome of the households was due to social (B = .201) and institutional (B = .169) tourism indicators with 14.9% of the total variance explained for rural households stratum (Table 2 & Table 3). About 33.7% of variance explained in the physical livelihood outcome for households in the Tourism Enterprises and related organizations stratum was significantly predicted by environmental (B = .367) and economic (B = .301) components of tourism (Table 4 & Table 5). Surprisingly, communities in the rural household's stratum in this study found that the environmental impact of tourism was not significant to enhance physical livelihood outcome and even it has a lower correlation coefficient than the social impact of tourism with physical livelihood outcome. But, previous research showed physical asset is the most imperative asset in adopting sustainable environmental strategies which in turn shows the significant liaison (Dehghani Pour, Barati, Azadi, & Scheffran, 2018). This may be associated with a lack of adequate knowledge about the environment which could enhance the physical livelihood outcome. The finding of the present study is also supported by the study that revealed the people with high levels of participation in tourism possess high levels of

livelihood assets mainly natural and physical capital assets (Su et al., 2019). Unlike the rural household's stratum, this study revealed that the environmental dimension of tourism has a significant contribution to the enhancement of physical livelihood outcomes for tourism enterprises and related organizations. This discrepancy between the stratus is due to a difference in knowledge and awareness of respondents that reflect the meaningful dissimilarity between rural households, and tourism enterprises and related organizations' respondents in the study area.

6.1.4. The impact of tourism components on institutional livelihood diversification assets

The institutional livelihood outcome of TEs was significantly predicted by three-component of tourism viz., institutional (B = .320), economic (B = .124) and environmental (B = .204) components of tourism for about 45.3% of its variance explained (Table 4 & Table 5). For rural households', the economic (B = .218) and institutional (B = .206) indicators of tourism were found significant contributors for the variance explained institutional livelihood outcomes of rural households with a percentage of 20.3% (Table 2 & Table 3). The benefits of tourism in serving as a tool for livelihood diversification strategy in the study area helped the various tourism enterprises to be organized such as Bahir Dar Tour Guide Associations, Bahir Dar Boating Service Associations, Lake Tana Number 1 and number 2 fisheries Associations, etc which enhance the institutional livelihood outcome that in turn enhance the socio-economic livelihood of communities at large. Economic and environmental impacts of tourism enhance the establishment of tourism institutions which again enhance the enhancement of institutional capital which in turn can improve economic, social and physical livelihood assets of communities.

In line with the present study, people's participation in tourism improves political/institutional capital (Stone & Nyaupane, 2017) that help the development of policies and various institutions that could improve the peoples' livelihood (Su et al., 2019). The need to develop tourism sustainably and reduce poverty has insisted community-based tourism enterprises where tourism income captured locally improves rural households' livelihoods and engenders linkages in the local economy (Lapeyre, 2010). Therefore, the government, communities and other stakeholders will benefit from tourism by enhancing tourism institutions and local enterprises that support people's livelihood and can bring sustainable livelihood in tourism and sustainable livelihood in general. But, tourism's impact on institutional livelihood is still very low which requires planned and valuable intervention in many protected areas, especially in developing countries.

6.1.5. The impact of tourism components on livelihood diversification

The mean score of the livelihood diversification outcomes was taken to measure the overall livelihood diversification impact due to the

economic, social, environmental and institutional tourism indicators for both HHs and TEs respondents. The result found that institutional ($B = 0.169$), economic ($B = 0.168$) and social ($B = 0.151$) aspects of tourism practices in this study significantly contribute for the improvement of rural households livelihood by 34.1% of an overall variance explained in the diversification of livelihood in the rural households stratum (Table 2 & Table 3). The significant impacts of tourism on livelihood found were: increased employment to minimal and seasonal, increased to decreased wealth, inequitable distribution of wealth, rising costs and expenses, decreased well-being such as social impacts of tourism and displacement from accessing or using some area (Bennett & Dearden, 2014) that supports the findings of the present study. The impact of tourism component factors on livelihood diversification was assessed that revealed the institutional ($B = .270$) and economic ($B = .255$) for about 46.3% of prediction on improvement for the Tourism Enterprises and related organizations stratum (Table 4 & Table 5).

The impact of tourism in National Marine Parks (NMPs) on the livelihood outcomes investigated has brought fairly positive to fairly negative impacts on livelihood outcomes of rural communities assessed from 17 NMPs (Bennett & Dearden, 2014). In line with this study, one can draw a conclusion that exhibited the contribution of tourism for livelihood diversification was better predicted in the Tourism enterprises and related organizations (TEs) than the rural households or communities which in turn indicate the locals have lower participation than households from TEs in tourism from the current study.

Local communities' richness in socio-cultural aspects would also benefit the communities in financial and non-financial aspects of livelihood at individual households and communities level. In terms of financial transfer policy, reduced urban poverty though did not increase urban income inequality requires appropriate policies that are demanded to address the issues in rural and urban areas differently unlike in the rural areas (Mahadevan, Amir, & Nugroho, 2017). This study also finds the contribution of tourism to enhance diversified livelihood and help to reduce poverty in rural areas and has still a viable role to support the poor and people from urban areas too. Tourism has heterogeneous effects on the poverty ratio in terms of a country's income per capita where its impact on poverty alleviation switches to be negative after a threshold of a country's income level (Kim, Song, & Pyun, 2016). The negative impacts found in the study of (Bennett & Dearden, 2014) contradicts to the present study where tourism impacts were found significantly positive to the livelihood outcomes.

Tourism did not only bring an alternative livelihood strategy for rural and urban households but also attracts conservationists, natural resource and protected area managers to identify tourism as an alternative livelihood strategy for local communities in and around protected areas (Goodwin & Roe, 2001). Tourism's contribution to both rural and urban regions led to poverty reduction and increase income inequality in rural areas (Mahadevan et al., 2017). The observations and semi-structured interviews revealed that there is no proportionate stake of communities to participate in different livelihood activities especially in tourism-related activities. The majority of the respondents from local people at the Zeghe Peninsula, Maksegnit and Gorgora are still dependent on their traditional livelihood activities like coffee plantation, farming, and firewood but only a few members of the household are engaged in activities related to tourism. Whereas the tourism activities at Kunzila Port are found non-existent regardless of its scenic view, rich fishing grounds used to serve as a trade port are now closed. The financial, physical and human capitals of rural households are the significant factors for households to diversify the highest level livelihood strategy to improve livelihood (Liu, Zhu, Lin, Li, & Wu, 2017). Given the fact that the higher expectations of people living in and around the protected areas about what tourism could offer to them (Goodwin & Roe, 2001), most of the people around Lake Tana Biosphere Reserve didn't meet their expectations. The reason for the low level of communities' participation in tourism in the study area is due to inappropriate policy, lack of financial capital and lack of government support in terms

of employment creation and revenue generation to improve and diversify local livelihood added with low-level tourist infrastructure. In line with the present study, tourism's impacts on the locals could also include socio-cultural, economic and environmental impacts (Medina-Muñoz, Medina-Muñoz, & Gutiérrez-Pérez, 2016) which could contribute to the enhancement of livelihoods and initiate communities in tourism.

As far as this study is concerned, socio-economic dimensions of tourism were found to have a significant effect on the economic well-being for rural households in which the social institutions, economic associations as well as the societal culture could contribute significantly to the positive tourism practice and enhancement of diversified livelihood in Lake Tana Biosphere Reserve. This is linked to the study in which Least Developed Countries (LDCs) with low capita income (below 3400 dollars) merely have benefited from the tourism industry in terms of reducing the poverty ratios (Kim et al., 2016). The tourism enterprises and related organizations that are dependent on tourism earn better incomes than the rural households where institutional and economic aspects have a significant role in their improved economic livelihood benefits in Lake Tana Biosphere Reserve. Similar findings portrayed the distribution of economic benefits of tourism regionally also exhibited that tourism earnings were found higher in urban areas than rural areas in China (Cao, Li, Song, & Shen, 2017). Tourism institutions and associations which are working in the tourism-related business have become major beneficiaries of tourism in achieving their improved livelihood as revealed in this study. The institutions' role in enhancing tourism's impact on livelihood was supported by the previous study that revealed institutions help to provide the appropriate training at the community level for acquiring professional skill such that locals could engage in tourism which in turn help to diversify households' livelihood (Anderson, 2014).

Tourism has a valuable role for tourism businesses in terms of creating more marketing opportunities through the promotion of tourism businesses, their products, and services to the external world. The higher the market opportunities the tourism businesses attain, the more the tourism businesses will engage in product diversification and new product development. These enable communities' social and cultural assets to be protected from damage and deterioration through the improvement of conservation knowledge which again enhances various economic opportunities such as profitability to business entities and employment opportunities for local communities. Even though tourism's contribution in improving livelihood varies across different households in different levels of economic practitioners like enterprises and farmers, it has a significant positive contribution in the overall livelihood which in turn helps to reduce poverty.

The present study's finding of the positive contribution of tourism on poverty reduction was also proved and in line with the study which tourism entertains both a contemporaneous effect as well as the long-run impact on poverty reduction but tourism impact on poverty, in the long run, seem to be less (Croes, 2014). Moreover, cultural tourism in China and Tanzania was found a significant contributor to livelihood diversification strategies that can also be practised in touristic rural areas whereby cultural values could be potentially converted into cultural tourism products (Anderson, 2014; Mbaiwa & Sakuze, 2009). The finding was in line with the present study in which many local communities from sample sites of Bahir Dar and Zeghe are mainly engaged in selling of their cultural and religious tourism products. Although such factors deterred households' communities from engaging in tourism, households with higher financial, social and human capital performed better in different tourism businesses (Xue & Kerstetter, 2019).

Furthermore, as far as impacts of tourism on communities' livelihood outcomes is concerned, tourism should be viewed in the eyes of various stakeholders as a complement and supplement than displacement (Tao & Wall, 2009a) in which the present study has shown a significant impact of tourism though the level of involvement in and the benefits gained from tourism are different. As portrayed in the previous study

despite the valuable impact of tourism for livelihood diversification, the level of household involvement in various tourism practices is hindered by tourism resources, residents' attitude, government policies, and the size of the tourism market which affects the potential for livelihoods and direction of prosperity (Stronza & Gordillo, 2008).

7. Practical implications

The low level of enhancement of tourism as a tool for livelihood diversification and community development in protected areas can be drawn from the unavailability of institutions effectively working in protected areas especially in such similar biosphere reserves of Ethiopia. Hence, developing countries should recognize tourism as a tool to promote economic development (Tamene & Wondirad, 2019). Developing small and medium scale tourism enterprises should be flourished to help people out of poverty in Ethiopia whereby community-based tourism is a vital approach of rural areas (Qian, Sasaki, Jourdain, Kim, & Shivakoti, 2017; Su et al., 2019). Therefore, a separate Destination Management Organization (DMO) should be established that can enhance Lake Tana's contribution as a tourism destination for livelihood diversification and improvement of livelihood to reduce poverty.

Community involvement and community membership, as well as networking in the whole development process, are vital to enlarge social livelihood capital as suggested in the previous study (Guo et al., 2018; Ooi, Laing, & Mair, 2015). Along with involvement, adequate pieces of training to rural households and different enterprises should be provided to boost awareness and increase the level of engagement in tourism. This is aligned to and linked with the study of (Beza, 2017). Empowerment of rural actors and unlock socio-economic opportunities for the future would be reflected due to the provision of on the job learning, training sessions, and extensive support by non-governmental organizations and donors (Lapeyre, 2010) which are exacerbated by the existence of tourism enterprises.

As far as tourism can't be an industry supporting the economy without other sectors such as agriculture, tourism development planners and destination organizations shall better integrate tourism development with other sectors (Ambelu, Lovelock, & Tucker, 2018; Tamene & Wondirad, 2019) that help to improve infrastructure, transport, energy other physical assets. Such integration of development and linkages can help to enhance sustainable livelihood to communities and sustainable development which integrates the biosphere reserve, the surrounding practice on agricultural land and different investments for sustainability with the inclusion of development area land use, facility site, and facility design plan.

Aligning to these practical implications, to heighten tourism effect on the overall livelihood and its livelihood outcomes equivalently, appropriate policies and destination management plans should be developed (Shen, 2009; Tamene & Wondirad, 2019) which can boost and frame institutional livelihood outcome and all other livelihood capitals.

Furthermore, future researches should focus on the policy development and conservation policies of integrated tourism development with traditional farming and urban economies. Besides, future studies should focus on integrated development and conservation model for sustainable tourism in Lake Tana Biosphere Reserve and other similar destinations for sustainable development and sustainable livelihood.

8. Conclusion

The results of the present study revealed that the effect of tourism on the livelihood outcome based on the sampled data has been found positive and significant. This study studied the dimensional tourism impacts on the livelihood diversification measured in terms of livelihood outcomes or assets in Lake Tana Biosphere Reserve. The results revealed though the tourism indicators or components are varied and contribution is different to each of the livelihood outcomes, each of the livelihood outcomes is predicted by at least one of the tourism impact

indicators.

The rural households diversify their livelihood from on-farm agriculture and off-farm livelihood strategy whereas the urban households diversify other than their permanent job to tourism livelihood through a part-time job, night shift jobs, and operate and work as employee in souvenir shops. The finding showed economic, socio-cultural, environmental and institutional tourism impact dimensions have a significant effect on livelihood diversification outcomes given the difference in magnitude and occurrence of the insignificant effect of tourism dimensions on across livelihood outcomes. In terms of income or economic return from tourism, households from TEs earn more than those from HHs stratum. But, in terms of social livelihood outcomes, rural households are better beneficiaries of tourism in the study area in terms of social ties, promotion of their traditional culture and having exposure with tourists. Moreover, the contribution of tourism on the physical livelihood is higher for TEs but very low for HHs which shows tourism doesn't provide local communities adequate access to pure water, health centres, paved road as well as electricity due to tourism. Only a few households nearby small towns are benefited from such services and facilities are not merely constructed from tourism though.

Furthermore, tourism enterprises and related organizations are more beneficiaries from tourism than rural households due to better institutional livelihood enhancement in the biosphere reserve. Hence, the households from TEs are better organized in associations and enterprises which could improve their livelihood, unlike rural HHs which are only limited to fishing associations in the study area. The effect of tourism on livelihood is too low despite the potentials of Lake Tana Biosphere Reserve. Lack of government support, inadequate awareness about tourism benefits, fish population decrement due to water hyacinth invasiveness and financial deficiency are the major hindrances raised by the households for the low level of benefits of tourism. Therefore, to make tourism as valuable pathway for livelihood diversification and tourism development sustainable in terms of its impacts in protected areas the following shall be good baselines; 1) develop a holistic and well-planned destination development, destination management and tourism development plan, 2) make the plan based on linkages of the protected area with other sectors, and 3) involve the communities both rural and urban to integrate livelihood and development with adequate finance, training, and relevant stakeholder involvement.

Declaration of competing interest

None'.

CRediT authorship contribution statement

Zemenu Bires: Conceptualization, Data curation, Formal analysis, Methodology, Project administration, Software, Supervision, Validation, Visualization, Writing - original draft, Writing - review & editing. **Sahil Raj:** Conceptualization, Data curation, Formal analysis, Methodology, Project administration, Software, Supervision, Validation, Visualization, Writing - original draft, Writing - review & editing.

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