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C O N T E N T S

THE IMPACT OF DIRECT FOREIGN INVESTMENT ON UNEMPLOYMENT IN JORDAN

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ABSTRACT

This study aimed at recognizing the size of direct foreign investment in Jordan and its impact on the rate of unemployment in Jordan. It also aimed at recognizing the constraints against the foreign investment. The study concludes that the low levels of these investments are attributed to the lack of regulating legislations that encourage foreign investment in Jordan. The study recommends the development of services and infrastructures; besides, the Jordanian concerned departments should prepare and disseminate the information on investment opportunities in Jordan.

Keywords:

Foreign Investment, Unemployment, Jordan

1. Introduction

The competition on attracting the foreign investment and increasing the local investment around the world has increased vastly during the last decade. As a consequence to the important changes that occurred in the frameworks of economic exchange among countries, these countries intended to conduct vast improvement in its economic and legislative structures to encourage foreign investors to localize their investment around the world. Most countries deregulated the constraints against the movement of capitals to benefit the huge flows of direct foreign investment.

Since Jordan suffers high rates of unemployment, it expects the increase of labor supply in the future in the light of current rate of population growth as well as the labor force of refugees, and the plans of government to improve or retain the standards of living of citizens.

The challenges require the increase of capital commulation as possible; especially there is a gap between saving and investing. Therefore, the flows of direct foreign investment to Jordan can support the local, but insufficient, investment.

Many researchers studied the nature of direct foreign investment in several countries, including Jordan [1] . Our study will focus on the size of foreign investment in Jordan and challenges that will encounter due to its importance to the national economy.

2. Questions of Study

This study will answer the following questions:

1) What is the size of direct foreign investment in Jordan?

2) Is there any relationship between the size of foreign investment and decrease of unemployment rate in Jordan?

3) What are the obstacles that hinder the momentum of foreign investment in Jordan?

3. Objectives of the Study

The study aims at achieving the following objectives:

1) Recognize the size of foreign investment in Jordan.

2) Recognize the impact of this investment on the total volume of investment.

3) Determine the obstacles that encounter the foreign investment in Jordan.

4. The Concept of Direct Foreign Investment

The direct foreign investments are the investments that are owned and directed by foreign investors through their full or partial ownership of projects that enable them to manage its affairs. The direct foreign investment has dual characteristics: first the foreign investor owns the economic enterprise inside the host country and the investor owns the project totally or partially [2] .

Through distinction between direct and indirect foreign investment we can differentiate the aspects of controlling and dominating the foreign project. When the investor controls or dominates his project abroad, the investment will be called direct foreign investment. If such investor doesn't dominate the foreign project his investment will be called indirect.

The direct foreign investment represents the first type, which is a simple form of foreign investment. This type is legislated and regulated by the developing countries because these countries seek greatly to attract such type of investment in order to seize the sources of production [3] .

Since this type of investment let foreign investors control and dominate actively their projects to achieve their interests, then they will be able to transfer the profits and advantages of these projects outside the said country, as well as dominating the production and marketing efforts of these projects [3] . Many countries depended on the direct foreign investment to sustain their developmental efforts, such as USA and some advances countries [4] .

5. Importance of Direct Foreign Investment to the Developing Countries

The importance of direct foreign investment stems from its attributes through creating new jobs, technology transfer, and providing advanced administrative knowledge to the said countries, besides assisting these countries to join the membership of exporting countries. The direct foreign investment enhances the economic development through international production in the countries that lack sufficient capitals.

The direct foreign investment is also important to the investors where they get diversification in production activity and be near the natural resources. There are some considerations that encourage developing countries to attract foreign investment:

Ÿ Direct foreign investment helps developing countries to support and fund the local capital to overcome the lack of capitals and deficit of trade balance, through flow of necessary capitals to create new projects.

Ÿ Many developing countries suffer a sharp shortage of national saving necessary for funding the development and investments, so they get assistance of the foreign investment.

Ÿ The use of appropriate management in the direct foreign investment helps economy to encounter and adapt to the external economic shocks through maintaining steady volumes of foreign capitals and long term economic growth.

The direct foreign investment can contribute to the development of exporting such as what happen in China at present.

The direct foreign investment can contribute to the development through the research activities in the concerned countries, such as the case of China with Microsoft.

The direct foreign investment can help enhancing the technology transfer that will increase the quality of skills and open new channels for marketing and exporting.

6. Aspects of Foreign Investment

There are two aspects of foreign investments.

1) Direct Foreign Investment in the Traditional Sectors:

This type works in production of natural resources that host countries need, through MNC companies, such as minerals, phosphates, potash and oil.

2) Direct Foreign Investment in the Least Cost Production or in the Markets of High Demand on the Production and Skilled Labor Force:

This type seeks to find places of available advantages in order to achieve high levels of profits, besides enabling the host countries to increase its ability and capacity to export and support its balance of trade.

Therefore, the direct foreign investment can assist the host countries through technology transfer, knowledge and skills transfer; create more job opportunities besides activating and enhancing the competition in the local market for some seekers.

If the host country earned benefits of these investments, these will improve productivity in the local market and support the export and economic development. In the phase of economic development, and according to the international commitments of the developing countries, they will not be able to inter the competition market locally and internationally.

Therefore, the direct foreign investment is very important to the developing countries to overcome the economic difficulties and improve its standards so as to reach the international market [5] .

7. Drivers for Direct Foreign Investment in Development Countries

There are different taxonomies for these drives based upon the goals of such investment. The major goal of the direct foreign investment in the markets with natural resources is to exploit the competitive advantage of these countries besides gaining the low wages labor force or skills. Another type of the direct foreign investment is represented by finding new markets abroad especially in the countries importing the products of the advanced foreign country that will invest there [6] .

The available and suitable climate for investing in the host countries means in general all legal, economic, political and social facilities represented by the infrastructure ready for investing. These factors affect the responsiveness of foreign capitals to localization.

7.1. The Economic Factors That Include

7.1.1. Nature of Economic and Commercial Activity

The commercial and economic activity has a great role in persuading the foreign investors to invest in the host countries. The foreign investors make efforts to remedy the lost or weak markets by new and blooming markets abroad.

7.1.2. Increase Profits

The main goal of any investor is growth and sustainability of projects through achieving more profits under their management. To achieve this goal many foreign investors find it is better to search for new markets with low cost of production, storage, labor force and marketing, to gain the competitive advantages over their rivals.

7.1.3. Desire for Rapid Growth

Earning revenues alone will not be sufficient to attract foreign investment, so those investors will seek to develop commercial exploitation of the markets [6] . The inability of national markets to achieve the goals of growth and expansion leads to foreign investments abroad [7] .

7.1.4. Reduction the Risks of Dependence on One Economic Market

The foreign investors, in general, makes effort to diversify their investments in several markets and countries to reduce the impacts of negative shocks of economic crises which any country or market may encounter. Therefore, most foreign global companies tend to open branches in several markets to balance the contradicted impacts of economic crisis.

7.1.5. Grasp the Educational and Technical Knowledge

The technological advancement and sophisticated technologies contribute to attracting more direct foreign investment. The developing countries will not gain such knowledge without the participation of the advanced countries, where some type of collaboration should be created and established between the developing and developed countries. This collaboration will be implemented through R&D contracts then production with cooperation of companies in the developed countries.

7.2. Legal Factors

The legal factors let foreign investors satisfied of legal protection that will enable them to invest without concerns of sudden changes that affect their investments.

7.3. Socio-Political Factors

The political stability is an essential factor in making decisions of investing abroad. The foreign investors will not risk transfer their capitals and expertise abroad if they are not satisfied that political conditions there are good and stable [8] . The stable status will increase the opportunities for transfer and movement of investments and capital freely and easily.

The preferences of consumers in the host countries in the favor of national products will encourage foreign investors to move their capitals abroad to establish production projects in the host countries [9] .

8. Obstacles against the Direct Foreign Investment in Jordan

1) Bureaucracy and multiple contradicted legislations that regulate the investment besides the references that investors should deal with create backward and affect negatively the investment environment [10] .

2) Unavailable qualified managerial skills that fit the nature of investments planned. The trained and skilled labor force in Jordan prefer to find another places such as Gulf States which in turn lead to lack of skilled labor force in Jordan that can handle the new projects. Such dilemma is called “The Brain Drainage”.

3) Unavailable environment that is characterized by economic security and stability so as the economic activities can be sustainable to attract more investments locally and globally .

4) Instability in the region affects negatively the foreign investment in Jordan due to the constraints of importation from Europe and exportation to the neighbor countries [11] .

9. Results

1) Jordan didn’t exploit the periods of high flow of investment to build a powerful industrial and economic base while the Jordanian economy continued in fluctuating upon the external conditions.

2) Despite the relative rise of investment and growth rates, it was not accompanied by a decrease in the rates of unemployment. This can be attributed to the concentration of foreign investments in specific sectors in Amman and absence of value added of these investments.

3) The direct foreign investment concentrates on establishing new projects or expanding present projects. These projects can’t classify in the short term which will be reflected on the stability of relative direct foreign investment in the times of crisis.

4) Despite the little foreign investments in Jordan, these investments didn’t contribute to development of local communities and support the public institutions outside Amman.

10. Recommendations

1) Provide more benefits facilities and incentives to attract foreign investments based on scientific approaches besides implementation of these investments to match the national interests.

2) Develop the logistic services and infrastructure of transportation to increase the efficiency of local products and secure its competitiveness in the external markets.

3) Eliminate or reduce the administrative constraints that hinder the trade exchange between Jordan and its partners.

4) Departments of investment encouragement should make studies about the opportunities for the foreign investment in Jordan and make campaigns to grasp these opportunities abroad.

5) Establish an advisory board for the Ministry of Industry and Commerce in Jordan to assist in planning the entire economic issues of Jordan and unifying the referrals that supervise the process of investment besides simplification of procedures for new foreign investments.

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References

1. Almohtasib, B.M. (2009) The Impact of Direct Foreign Investment on the Economic Growth of Jordan (1990-2006). J. Dirasat, 36.

2. Alzahawi, F.H.S. (1984) Joint Enterprises According to the Law of Investment.A Doctoral Dissertation, Faculty of Law, University of Cairo, Cairo, p. 65.

3. Alsayed, A. (1990) The Taxation Treatment of Foreign Investments. Dar Alnahda, Cairo, Egypt, p. 6.

4. Abdulazeez, S.M. (1988) New Approaches of Funding the Economic Development. Mo'assast Shabab Aljami'ah, Alexandria, p. 421.

5. Mohammad, N.H. (1992) The Economic Reform and Challenges of Development. 321.

6. Alsamerai, D.M. (2006) Foreign Investment, Constraints and Legal Guarantees. Center for African Unity Studies, 86-89.

7. Mohammad, N.E. (2010) The Impact of Foreign Direct Investment on the Future of Local Arab Investment: Analytical Metric Study for Some Gulf States during 1992-2010. p. 42.

8. Saeed, M.S. (1986) Multi National Companies (MNC, s) and the Future of National Phenomenon. A'alam Alma'rifah, Kuwait, 28-29.

9. Mudafar, A. (1985) The Nature of International Economic Base within the Present International Order. Dar Alnahda, Cairo, p. 12.

10. Alesawi, I.H. (1976) The Realism of Expectation of Foreign Investment Flow and Its Contribution to Development of Egypt. A Paper Presented in the 1st Annual Conference of Egyptian Economists, Cairo, 25-27 March 1976, 128-129.

TOURISM AND EMPLOYMENT SPILLOVERS IN A SMALL ISLAND DEVELOPING STATE: A DYNAMIC INVESTIGATION

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ABSTRACT

Using a dynamic vector error correction model, and catering for dynamism and endogeneity, the present study attempts to address the question on whether tourism development enhances employment in Mauritius using time series data for the period 1988-2014. The results show that indeed tourism expansion has contributed towards boosting direct, indirect and induced employment in both the long run and short run. The findings also demonstrate that investment in the tourism sector positively influences the employment variable. Moreover, a uni-directional causality is found in the investigation running from tourism development to employment creation as a result of the expansion of the tourism sector.

Keywords:
Tourism, Employment, VECM

1. Introduction

Small island economies very often rely on the tourism sector for development. The tourism sector generates various benefits in terms of an inflow of foreign currencies and generating economic growth. Importantly, tourism is also labour-intensive and supports a diverse and versatile labour market and also provides small-scale employment opportunities, thereby helping in the promotion in gender equity. Furthermore, there are various indirect benefits of tourism for those down the income ladder, including increased market access for remote areas through the development of roads, infrastructure, and communication networks. Several policies for tourism development have been found to be effective in creating employment and income opportunities for vulnerable groups [1] .

Referring to the Mauritian tourism sector, it is regarded as a major GDP contributor for the island. By the end of 2013, it accounted for approximately 7.1 per cent of gross domestic product (GDP) and such a number is expected to grow in the future, even more so in light of the audacious objective of the government to host more than two million tourists by 2015-2016.

While most empirical papers focus on the study of tourism and economic growth, the present paper takes a different approach and attempt to investigate the link between tourism development and employment created due to the tourism industry in the small island developing state, Mauritius. This study thus strives to add on to the literature to address these issues which have been hardly dealt in previous researches. Also, the present paper adopts a rigorous dynamic time series analysis namely a dynamic vector error correction model (VECM) to carry out the proposed investigation. Such a procedure will ensure that the dynamic behaviour of the time series under consideration is properly captured, while simultaneously catering for endogeneity and causality issues. Any feedback and indirect effects which may be present will also be detected within the VECM. The model also allows for the identification of any bi-directional and/or uni-directional causality between the variables of interest.

The rest of this paper is organized as follows: Section 2 discusses the literature while Section 3 defines the methodological approach used and Section 4 discusses the findings and finally the conclusion is presented in Section 5.

2. Literature Review

Tourism is seen to generate important externalities to other sectors of the economy, thereby generating significant benefits to the local economies. This can be explained by the fact that while tourists visits a particular country, the demand for local goods and services increases, mainly by direct spending as well as indirectly through the multiplier effects.

The tourism industry is as well seen as one of the key sectors that enable the creation of jobs in the local economy. However, though tourism is seen to be very important for the economy, rigorous empirical evidence on the contribution of tourism to the local economy is limited.

Several investigations have showed that tourism development has the possible effect of promoting economic growth, creating jobs and generating revenue for the government. Referring to the Tourism Led growth hypothesis which is an analysis of the probable relationship between tourism and economic growth supports a bi- directional relationship between tourism and economic growth [2] . Moreover, tourist spending is regarded as an alternative form of exports which provides much needed foreign exchange earnings for an economy which are used to import capital goods to produce goods and services, which in turn may foster economic growth in host countries [3] .

The employment creation aspect of tourism is another vital contributor to promulgating economic growth and development of the host country. For instance, the tourism industry employs local citizens in hotels, restaurants, and entertainment and tourist services which cater directly for tourists or through the multiplier effect [4] . Furthermore, in view of the prevalence of service quality in the tourism sector, there is a constant demand for training which can only serve to upgrade the skills of local employee working in the industry. And in this regard, skill transfers are common practice for international hotels[1].

Crucially also, many developing countries are dependent on the tourism sector as a major source of foreign exchange; even more so since such foreign exchange revenues often serve to contribute towards improving the host countries balance of payments (Belloumi, 2010). In this vein also, Robu and Ballan (2009) suggest that a growing national tourism sector contributes to increased national income and employment which effectively leads to an improved balance of payment situation.

Finally, it may be argued that tourism sector can also potentially contribute towards building and/or reinforcing the positive image of a destination in which they choose to locate. For example, the establishments of foreign hotel chains in a host country can only enhance a destination's positive image. Furthermore, as supported by Kusluvan and Karamustafa [6] , the knowledge that familiar hotels exist in particular countries encourages and reduces the search costs for potential tourists.

Finally, an increase in employment as a result of tourism development has the potential to reduce the level of poverty and increase the welfare of the population in the country. Hence, there might result in an increase in income thereby improving the quality of life mainly for those down the income ladder.

3. Empirical Specification & Methodology

3.1. Empirical Specification

The aim of this study is to investigate the relationship between tourism receipt and employment creation in Mauritius over the period 1988 to 2014. An augmented form of the labor

demand equation is being adopted (see Kosova, 2013 [7]) to allow for dynamic adjustment of employment. The following econometric model is being used;

$$Emp = f\left(TOU, GDP, INVTT, INF, FIN\right). \quad (1)$$

All the variables have been expressed in their natural logarithm form to reduce the problem of heteroskedascity as well as to ease comparison and offer more meaningful interpretations. This result in the following:

$$\ln EMP_t = \beta_0 + \beta_1 \ln TOU_t + \beta_2 \ln GDP_t + \beta_3 \ln INVTT_t + \beta_4 \ln INF_t + \beta_5 FIN_t + \varepsilon_t \quad (2)$$

where t represents time; ε is the random error term.

Model 1 is used to analyse the impact of tourism on total employment generated by the tourism sector which is measured by EMP and the proxy used is total contribution of travel and tourism to employment.

The total contribution of Travel & Tourism includes its "wider impacts" (i.e. the indirect and induced impacts) on the economy. The direct contribution of travel and tourism to employment includes employment by hotels, travel agents, airlines and other passenger transportation services (excluding commuter services). It also includes, for example, the activities of the restaurants and leisure industries directly supported by tourists. The "indirect" contribution includes the jobs supported by: Travel & Tourism. The "induced" contribution measures the jobs supported by the spending of those who are directly or indirectly employed by the Travel & Tourism industry (World Travel and Tourism Council).

The variable tourism receipt as a measure of tourism development in the country is also added in the present model. Tourism development is regarded as a crucial element for creating jobs in the country. Apart from direct employment creation, tourism also has the potential to create jobs in the other sectors as well. Hence, tourism leads to employment spillovers to the economy. In this investigation, tourism receipt is used as a proxy for tourism expansion in the country and data are extracted from the Statistics Mauritius database.

Other variables included in the model are seen to influence employment in one way or another. For instance, economic growth has an important role to play in the creation of jobs in the economy. For instance, economists like Arthur Okun studied the link between economic growth and unemployment levels. The logic behind Okun's law[2] is simple. Output depends on the amount of labor used in the production process, so there is a positive relationship between output and employment. Total employment equals the labour force minus the unemployed, so there is a negative relationship between output and unemployment (conditional on the labor force). Hence, a positive sign is expected for economic growth here. The proxy used to calculate economic growth is real GDP and data are extracted from the Statistics Mauritius.

Moreover, investment in the tourism sector (INVTT) is also included in the model to account for the link between investment in the tourism sector and employment. For instance, the higher the investment in the sector, the more labour will be demanded. Hence, investment in the tourism sector is seen to boost employment and the data are extracted from statistics Mauritius. Another variable included in the study relate to inflation rate.

Analysing the link between employment and inflation, we rather find discussion on unemployment and inflation. A short term trade-off between unemployment and inflation is discussed by economist A. W. Philips [9] showing that when inflation is high, unemployment is low, and vice versa. This relationship is known as the Phillips curve. When monetary policy is used to reduce inflation, either by contracting the money supply or by raising interest rates, this reduces aggregate demand, while aggregate supply remains the same. When aggregate

demand decreases, prices decrease, but unemployment rises. This link is seen to hold in the short run than the long run. Hence, a direct relationship between employment and inflation is expected. The proxy used for inflation is GDP deflator.

Finally, a binary dummy variable for financial crisis is included in the model. Indeed the global financial crisis and the economic downturn have impacted negatively on the Mauritian tourism sector. This will have negative impact on employment in the sector as well.

3.2. Estimation Issues

A VAR approach is used to delineate the relationship between employment in the tourism sector and tourism development. Such an approach does not impose a priori restriction on the dynamic relations among the different variables. It resembles simultaneous equation modeling, whereby several endogenous variables are considered together. Hence, the VECM linking the short term and long term causality between employment in the tourism sector and tourism development is set as follows:

$$\Delta \ln EMP_t = \alpha_0 + \sum_{j=1}^{n} \alpha_1 \Delta \ln TOU_{t-j} + \sum_{j=1}^{n} \alpha_2 \Delta \ln GDP_{t-j} + \sum_{j=1}^{n} \alpha_3 \Delta \ln INVTT_{t-j} + \sum_{j=1}^{n} \alpha_4 \Delta \ln INF_{t-j} + \sum_{j=1}^{n} \alpha_5 \Delta FIN_{t-j} + \eta ECT_{t-1} + \varepsilon_t. \quad (3)$$

The coefficient of the error correction term (ECT_{t-1}) indicates whether there exists a short run relationship among the time series variables.

Furthermore, applying regression on time series data may generate spurious results [8] [9] given the possibility of non-stationarity data. As such, undertaking a check as to the stationarity of data is a prerequisite for applying the co-integration test. As a result, the Augmented Dickey-Fuller (ADF) test (Dickey-Fuller, 1979, 1981) and the Phillips-Perron test [9] were applied.

4. Analysis of Finding

From the application of the augmented Dickey-Fuller (ADF) (1979) and Phillips-Perron (PP) [9] unit-roots tests, we observe that all the variables are integrated of order 1 and stationary in first difference. The Johansen Maximum Likelihood approach is subsequently used to test the presence of cointegration in a vector error correction model in the specification. Trace statistics and maximal eigenvalue confirm the presence of co-integration and it is thus concluded that a long run relationship exists in both above specifications.

4.1. Empirical Results

The long run estimates of equation 2 are reported in Table 1 below.

The table below displays the long run relationship between employment contribution due to the tourism sector and the main variable of interest, namely tourism development and, the control variables (economic growth, gdp, investment in the tourism sector, INVTT, inflation, INF and the financial crisis dummy, FIN).

Analysing the main variable of interest, which is tourism development, it can be observed that it has positively affected overall employment flowing due to the travel and tourism sector. For instance, one can therefore argue that tourism development has contributed towards boosting direct employment, indirect employment and induced employment to the country. Hence, apart from directly creating jobs in the tourism industry, a development in the tourism sector has also led to employment in other sectors of the economy. Hence, there is a positive employment spillover in Mauritius due to tourism development. This result is in line with Serju et al., 2006 [10] .

On the other hand, focusing on the GDP variable, the results in the long run are as expected. For instance, a 1% increase in GDP in the country, has led to a 0.32% increase in employment creation due to the tourism sector. Hence, this result reinforces the okun's law postulating a direct relation between output and employment creation. This result is in line with Cook et al., 2012 [11] , who found economic growth is a prerequisite for employment creation.

Turning the attention towards the investment in the tourism sector variable, proxied by INVTT, it is noted that this variable is also important in explaining employment creation due to the tourism sector. Hence, as investment increases it creates jobs in both the tourism sector and creates jobs in other sectors as well, such as the construction industry. As far as the other control variables are concerned, such as inflation and financial crisis, an insignificant result is obtained in the long run. For instance, zooming on the inflation variable, it is noted that an increases in prices in the country has not really affected employment created as a result of the development in the tourism sector. Hence, inflation has not really affected the employment variable in this study in the long run. It is also noteworthy that the financial crisis has not really discouraged employment creation due to the expansion of the tourism sector in the long run. Mauritius has been able to shield itself against the effect of the global financial crisis in the long run.

To sum up, the results presented in Table 1 above suggest that on the whole, employment contribution due to the expansion of the tourism sector is conducive to tourism development in the long run. Results are in line with earlier empirical studies, including Kosova, 2013 [7] .

4.2. The Short Run Equations

Since the variables are co integrated, in the short run, deviations from the long run equilibrium will feed back on the changes in the dependent variables so as to force their movements towards the long run equilibrium state. The deviation from the long-run equilibrium is corrected gradually through a series of partial short term adjustments, the co-integration term or the error correction term (ECT). It indicates the speed of adjustment of any disequilibrium towards the long-run equilibrium.

The empirical results of the short run estimates of the VECM are displayed in Table 2. Table 2 is a composite table, where each column can be viewed and analyzed as an independent function, that is, each column in the table corresponds to an equation in the VECM. The variable named in the first cell of each column is viewed as the dependent variable. The estimated coefficient of the explanatory variables is reported in the cells. Our focus will be on the first column.

Analysing the short run estimates of equation two, that is the regression equation with employment as the dependent variable, it can be argued that even in the short run there is a direct link between employment creation due to the tourism sector and tourism development. Another significant variable affecting employment variable in the short run is investment in the tourism industry. However, the other variables have insignificant effect on the dependent variable.

Furthermore and as discussed previously, the VAR/VECM framework allows us to gauge more interesting insights on endogeneity issues and also allows us to detect any potential indirect effects. Whilst, the results show that tourism development influences employment, the results reported in the above table demonstrate that employment created as a result of the tourism sector in the country does not influences tourism expansion. In this regard, and more specifically referring to the employment equation depicted in the fifth column in Table 2, it is observed that there is no reverse causation which exist between tourism development and employment creation as a result of tourism expansion. Thus, the results demonstrate that a uni-

directional relationship flowing from tourism development to employment creation due to the tourism industry. This is further confirmed by the granger causality test as shown in Table 3.

In addition to that, the fifth column further shows that tourism development is enhanced by investment in the sector.

5. Conclusions

This investigation starts by empirically examining the relationship between tourism development and the level of employment created due to the tourism sector that is the level of direct employment, indirect employment and induced employment created as a result of tourism expansion in Mauritius. A number of major findings were obtained. The first one indicates that in both the long run and short run the employment proxy is conducive to the tourism expansion variable. Results further support that economic growth and investment in the tourism sector are significant variables affecting the level of employment created due to the tourism sector. In addition to that, the results also show that there is a uni-directional causality running from tourism development to employ- ment creation as a result of the tourism sector. Since tourism development is seen to be a crucial element for the economy of Mauritius, additional policies should be implemented to further encourage tourists to come in the country as well as encourage investment in the tourism sector.

For further research, this study can be extended on small island economies and investigate the impact of tourism development of employment spillovers in a panel framework.

Cite this paper

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References

1. Ashley, C., Roe, D. and Goodwin, H. (2001) Pro-Poor Tourism Strategies: Making Tourism Work for the Poor.

2. Brida, J.G., Carrera, E.J.S. and Risso, W.A. (2008) Tourism's Impact on Long-Run Mexican Economic Growth. Economics Bulletin, 3, 1-10.

1. 3. Balaguer, J. and Cantavella-Jorda, M. (2002) Tourism as a Long-Run Economic Growth Factor: The Spanish Case. Applied Economics, 34, 877-884.
http://dx.doi.org/10.1080/00036840110058923

4. Haley, U.C.V. and Haley, G.T. (1997) When the Tourists Flew in: Strategic Implications of Foreign Direct Investment in Vietnam's Tourism Industry. Management Decision, 35, 595-604.
http://dx.doi.org/10.1108/00251749710176091

5. Dwyer, L., Forsyth, P. and Dwyer, W. (2010) Tourism Economics and Policy. Channel View Publications, Cheltenham (Textbook).

6. Kusluvan, Z. and Karamustafa, K. (2003) Organizational Culture and Its Impacts on Employee Attitudes and Behaviors in Tourism and Hospitality Organizations. In: Kusluvan, S., Ed., Managing Employee Attitudes and Behaviors in the Tourism and Hospitality Industry, Nova Science Publishers, New York, 453-485.

7. Kadiyali, V. and Kosová, R. (2013) Inter-Industry Employment Spillovers from Tourism Inflows. Regional Science and Urban Economics, 43, 272-281.
http://dx.doi.org/10.1016/j.regsciurbeco.2012.07.006

8. Granger, C. and Newbold, P. (1974) Spurious Regressions in Econometrics. Journal of Econometrics, 2, 111-120.
http://dx.doi.org/10.1016/0304-4076(74)90034-7

9. Philips, P.C.B. (1986) Understanding Spurious Regression in Econometrics. Journal of Econometrics, 33, 311-340.
http://dx.doi.org/10.1016/0304-4076(86)90001-1

10. McCatty, M. and Serju, P. (2006) Tourism, Economic Growth and Employment. Bank of Jamaica, Kingston.

11. Fine, D., Wamelen, A.V., Lund, S., Cabral, A., Taoufiki, M., Dorr, N., Leke, A., Roxburgh, C., Schubert, J. and Cook, P. (2012) Africa at Work: Job Creation and Inclusive Growth.

TOURISM DISTRIBUTION SYSTEM AND INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT) DEVELOPMENT: COMPARING DATA OF 2008 AND 2012

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ABSTRACT

Information and Communication Technologies (ICTs) and the development of the online channel have transformed the competitive environment of the tourism industry within a brief span of time. However, our knowledge about the details of the evolving trend of the distribution system is scarce. Considering the prior literature, this research analyzes the evolution of the sector's structure, the power of tourism operators, the production processes and products of the tourism sector. The work uses primary information which is taken from surveys to experts in the sector, within a European context. The results of the work, based on a comparison between two samples in 2008 and in 2012, underscore the development of the distribution system and the significant changes happened in opinions regarding the relationship between the use of ICTs and value creation, regarding ICTs and product quality, and regarding how ICTs facilitate the adoption of the best practices in the industry. Multiple and exclusively online channel strategies are the most involved.

Keywords:

ICT, Tourism Distribution System, Tourism Online Channel

1. Introduction

In recent decades, Information and Communication Technologies (ICTs) have transformed the competitive en- vironment surrounding the tourism industry. Thus, from the demand-side, the development of the online channel has consolidated its position as an important purchasing channel. In fact, 25% of the European tourism market used online channels in 2009, in which total sales exceeded 68 billion euros [1] . From the supply-side, the tourism has experienced a continuous expansion, becoming one of the sectors of major economic growth and importance in the world. Even in an economic crisis, the development of the tourism sector has been a constant. In 2012, it generated one of every eleven jobs worldwide: 6% of the total of world exports and the number of international tourists reached 1035 million. Among the main tourist destinations in 2012 are found France, the United States and Spain [2] . In the case of Spain, the number of tourists increased by 2.7% between 2011 and 2012, going from 56.2 million to nearly 58 million, respectively [2] . This means that the visitor levels that were present before the crisis are once again being reached. Moreover, 65% of the tourists who visited Spain in 2012 used the online channel to consult reservations or pay for their trip, an increase of 8% with respect to previous years [3] . Moreover, the tourism GDP of 2013 increased by 0.6%, providing more than 10% of the Spanish GDP[1].

For today's economies, these data are encouraging because they show that the role of the tourism sector is a driver of recovery through sustainable economic growth. In this sense, we know that the introduction of ICTs in the sector has represented both an important challenge and an opportunity for tourism companies. Thus, the development of ICTs has modified the foundations of the industry [4] and of the tourism distribution system through changes in the

industry's structure, in the power of the operators and in tourism production processes and products [5] . Considering these results, it is expected that, within the elapsed time, the tourism sector has learned how to take greater advantage of ICTs and that the growing online offer continues to challenge structure, power and production causing changes in the sector. But, it would be interesting to examine these advances in detail in order to discover possible differences and to decide ways of differentiation in a tourism sector, which is a determinant economic industry.

In view of this situation, the main objective of this work is to analyze and delve into the changes in the tourism sector resulting from the development of ICTs and of the online channel by comparing data from 2008 and from 2012. The opinions of participants in the distribution system, managers from organisations in the sector, obtained in 2008 and 2012 through surveys, were analyzed. 2008 is recognized as the first crisis year and we find it interesting to compare the situation observed then with the situation in 2012. The outlook of the respondents may be influenced by the difficult economic situation, which has endured and created much uncertainty.

The work is structured as follows. First, a review of the literature that explains the approach of the research's proposal is presented. Then the design of the empirical research and the results are offered. Finally, the conclusions of the research and its implications are discussed.

2. Evolution of Changes in the Tourism Distribution System Resulting from the Intensive Application of Information and Communication Technologies (ICTs)

Specialised literature acknowledges that ICTs are modifying the tourism distribution system. Specifically, this literature identifies three main aspects of change: 1) the structure of distribution in the sector; 2) the power of tourism operators; and 3) the tourism production process and products-services [5] .

Regarding the distribution structure of the sector, the development of ICTs has caused a major transformation in the operating method and in the strategies of the tourism industry [6] [7] . In fact, this development has generated changes in the way that companies in the sector plan, control, operate and integrate technologies into their activities (Kasavana and Cahill, 1992) [8] [9] . The result is that changes are occurring to the sector's structure, and opportunities and threats are developing for all the participants.

In addition, changes are occurring to relationships and movements, which are tending towards integration [10] -[12] and towards the interconnection of and interactivity among agents in the sector [13] . In fact, the rapid incorporation of ICTs in management of the tourism distribution channel has meant changes in power positions [5] , in the contribution by suppliers and intermediaries to the different phases of the distribution channel [13] [14] and in the share of the various participants in the value chain [5] .

On the other hand, the changes that have occurred in tourism production processes and products and that are derived from the intensive application of ICTs have allowed the following: improving the quality of the service, improving the satisfaction of consumers and intermediaries [15] and reducing and eliminating costs, thereby improving the effectiveness of the tourism production process [5] [9] .

All these changes have occurred in a relatively brief span of time. The latest data from the sector could be added to these changes. Moreover, in recent years communication media that intrinsically include the experiential context in how they operate have emerged. The Report of the World Travel Market of London [16] states how 80% of the companies in the tourism sector who participated in the study use social media for communicating with their customers, and more than a fifth (22%) use social networks as a tool to generate earnings. This data show

that in the travel sector not only are ICTs highly integrated in the process of making purchases through a specific web page, but there is also evolution towards other technologies, such as search engines, social networks, etc., where sales, communications and advertising strategies are targeted.

Based on these considerations, we pose the following research proposal.

Proposition: "The tourism distribution system follows an evolving trend marked by the progressive growth of the online channel, which is revealed in a dual distribution system (offline and online) through structural changes, changes in the power of the participants in the channels and changes in the production processes".

3. Empirical Methodology

The empirical research was conducted using primary information obtained from surveys. Two surveys were taken, both of which were ad-hoc and self-administered. One of them was conducted during the months from June to September 2008, targeted at intermediaries with stores located in Spain, and the other was conducted during the month of April 2012 (see the data sheets in Table 1), which was targeted at all agents involved in the channel, except for the consumer. The content of questionnaires is a result of the review of the literature and qualitative research resulting from in-depth interviews done with experts in the sector (top managers).

The questionnaires of both studies are comparable. The second one was based on the first and included additional items pertaining to the specific activity of the online channel. The questionnaire was structured into two blocks. The first block includes questions directed at characterising the company, and the second block includes variables about the effects of the intensive application of ICTs in the tourism sector. Specifically, it asked about the structure, about the power of agents and about production processes and products. The questionnaires were posed as affirmations using an 11-point Likert scale, from 0 for completely disagree to 10 for completely agree. This is a type of measurement scale amply used in the literature (e.g. in the tourism sector) [5] [17] . It has the advantage of providing a better approach to the normal distribution and allowing the respondent to choose an answer from a greater range of possibilities. This may give more variability to the distribution of the variable measured [18] . Table 2 includes the indicators corresponding to each criterion, as well as the references on which they were based.

3.1. Description of the Samples

A descriptive analysis of the samples allows characterising the respondents in both cases, while considering their similarities and differences.

The characteristics of the samples are presented in Table 3. Most of the respondents are traditional travel *TA: travel agencies (could be a mixture of offline and online); GDS: global distribution systems; CRS: central reservation systems; TO: tour operators; OTA: online travel agencies; ADS: alternative distribution systems; ODD: online distribution database.

agencies in both sample 1 (69.8%) and sample 2 (49.4%). 10.6% and 13% are GDSs and CRSs in samples 1 and 2, respectively. 6.9% are tour operators in sample 1, in comparison with 13% in survey 2. Moreover, 16.9% are online travel agencies (OTA), 9.1% are ADSs and the remaining 5.2% are ODDs in survey 2. Note that there are no tourism agents who work exclusively online in survey 1. Furthermore, in both samples, over 60% of the respondents (representatives of companies in the sector) have been using ICTs for more than six years.

3.2. Evolution of Changes in the Tourism Distribution Structure: 2008 and 2012

In order to cover our objective, an analysis of the comparison of means between the perceptions of the attendees at Travel Distribution Summit in 2012 and those surveyed in 2008 is done and shown in Table 4. As we have two independent samples, this is the empirical meth-

odology selected as more appropriate. The samples represent, approximately, the share of each type of operator in each time period, although the first one does not include suppliers. The fact that the first sample is marked by the opinions of retailers and that the second is marked by the opinions of suppliers is deemed to be positive for the purposes of the comparative study to be carried out.

The samples also have different sizes (132 in 2008 and 87 in 2012). Therefore, in order to apply Student's t- test for the comparison of means of each variable, first Levene's test for equality of variances is conducted[2]. The comparisons are made using 18 indicators. The first 4 relate to the criterion of a structure change in the distribution system, the next 5 are included in the criterion of a power change among tour operators in the channels and the remainder form a part of the criterion of a change regarding tourism production processes and products. Standard deviation; $^{**}t < [1.96]$, for a 95% confidence level, there are no significant differences.

Considering the results obtained in previously developed studies [5] [17] , the research premise consists in expecting, within the elapsed time, that the tourism sector has learned how to take greater advantage of ICTs and that the growing online has caused structure, power and production changes. This is a research premise because the opinion in 2008 of the respondents had no knowledge of the future crisis period and its consequences.

Taking into account the two main contextual differences, meaning the non-presence of either suppliers or agents who work exclusively online in survey 1 (the initial composition included GDS, CRS, TO and TA, to which OTA, ADS and ODD were added in survey 2) and the lapse of time (given that opinions from 2008 and 2012 are being compared), in order to meet the stated premise, the difference of means analysis for the independent samples should not result in significant differences. This would verify that there is an increased opinion of the influence by the analyzed changes on the sector's distribution system over time, and this is precisely what happens in the first two blocks of considered changes.

However, statistically significant differences are observed between the mean values offered for variables V.11, V.13, V.14, V.16 and V.17; in other words, for the indicators included in the third change criterion.

Thus, in the first block of comparisons pertaining to structural changes, the opinion of the respondents shows a notable influence by the intensive application of ICTs by those respondents, thereby increasing relationships and facilitating access between operators.

Something similar happens regarding changes in the power position of operators. Those surveyed in 2008 and those surveyed in 2012 coincide in their valuations insofar as they note: 1) the existence of alterations in the role played by the participants in the value chain; 2) that information management is a key element for improving positions; 3) that traditional operators have fewer opportunities with respect to suppliers; and 4) that strategic alliances are favoured within the current context of the intensive application of ICTs in the sector. The values that are assigned to these valuations are also notable (higher than 8 points in all cases).

Regarding changes in production processes and products, the comparison reveals that there is no statistically different valuation regarding the overall assessment of these ICT-derived changes or regarding opinions about the greater ease of offering integrated more personalised and global services.

So, on the one hand, the initial sample gives greater importance to information for creating added value, while the latter sample decreases this importance by half of a percentage point (V.11; from 9.4 to 8.4). It could thus be that the sector is recognising certain saturation in the use of information through technological means as an element of differentiation. In oth-

er words, it is necessary to know how to create value in the tourism service using other resources and through new politics, strategies and operational resources implemented.

On the other hand, there are some items rated more positively four years later. The opinion of the second sample reveals higher consideration for the ability of communication technologies to reduce costs (V.13; from 6.8 to 8.4). It thus seems that the expectations initially generated by said technology were right, with respect to the possibility that it would provide greater management efficiency. This fact is complemented by the valuation of the influence by ICTs on product quality (V.14). The positive opinion in this regard increased by two percentage points (from 5.6 to 7.7). This difference is noteworthy due to the fact that in the initial sample (2008), the mean value didn't even reach 6 percentage points; it was the least valued variable of the eighteen considered.

The same thing happens with the ability to innovate in the sector (V.16). It confirms that information and communication technologies promote the development of innovations, with an increase of nearly one and a half percentage points (from 7.9 to 9.2). Finally, the valuation is also a positively differentiated in the comparison of opinions about the extent to which ICTs facilitate the best practices in the industry (V.17; from 6.4 to 8.1).

The greater number of suppliers in the second sample could bias these considerations about the differences noted between the two samples. In other words, it is possible that the observed differences are attributable not only to the passage of time and a certain derived evolution, but also to the fact that suppliers could be stating that intermediary resources (not just the transmission of information) are being used better and that suppliers are more affected by cost reductions, by the possibilities of increasing the services they offer and by the innovations that are applicable to the sector. The differential opinion that betters practices than before are being applied is positive, independently of the greater number of one type of operator or another in the samples.

With these results, we can accept the research proposal, given that after the fieldwork conducted in 2012, we have observed the increasing presence of online operators in the sector. Moreover, we verified that changes in the tourism distribution system continue to occur and that, according to the opinion of those who are involved, the influence thereof continues to be notable in the system's structusre, in the power position of the channel's participants and in production processes.

4. Conclusions, Implications for Management and Future Research

The development of the online channel in the tourism distribution system has involved a modification of its distribution system's structure and of the production processes as well as a change in the behaviour of the agents. Given the challenges and possibilities derived from this fact, this work, through an analysis of the opinions, examines differences between those changes in the tourism sector resulting from the intensive application of ICTs. Changes in the sector's structure, changes in the power of tourism operators and changes in tourism production processes and products are researched.

These questions are included in a research proposal, and they are analyzed through a comparison of data of 2008 and 2012.

The results obtained verify the importance of the continuing development of ICTs in the tourism distribution system, as well as the influence by structural changes, by power position changes and by changes in tourism production processes and products on the system (in 2004 data, the values of the variables considered are higher of 7.8 as a mean). In this regard, the work concludes by verifying the increasing importance of ICTs for the agents in fomenting innovation, in decreasing production and distribution costs, in achieving a higher quality tourism product (although that is the lowest average value) and, in the ease of creating more flexi-

ble and adaptable products. Moreover, the adoption of good practices in the industry is favoured when companies in the sector adopt ICTs.

However, information seems to have ceased to be the main advantage for companies for differentiating themselves in the sector by creating value through the online channel. This seems to be accepted as a given and differentiation must be achieved through other means. The tourism operators have to note this novelty and go working in other ways to maintain their positions. In this sense, opportunities may come from the use of online managerial tools as e-wom and a more operational management.

These conclusions have implications for tourism company managers, given that they demonstrate the need to be present in the online channel in any event. The evolution of the channel in recent years indicates that this presence is necessary for survival purposes in the sector. Those who seek something more than survival must know how to obtain, select, process and present their offers better, while differentiating those offers from the rest by making good use of ICTs.

Finally, it must be kept in mind that this study is exploratory and requires greater development, in which future research should be engaged. Moreover, it is a study that is focused on obtaining conclusions from the opinions of organisations, and it does not include the consumer's perspective.

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References

1. Pestek, A. and Muris, C. (2010) Application of E-Marketing Strategies in Tourism Sector in Bosnia Herzegovina. Pro- ceedings of 5th International Conference an Enterprise Odyssey: From Crisis to Prosperity—Challenges for Government and Business, Opatija, 26-29 May 2010, Page.
2. World Tourism Organization (UNWTO) (2013) Annual Report. http://www2.unwto.org/
3. Frontur Encuesta de Gastos Turísticos (2012) Annual Report. http://www.iet.tourspain.es
4. Hjalager, A.-M. (2010) Progress in Tourism Management: A Review of Innovation Research in Tourism. Tourism Management, 31, 1-12.http://dx.doi.org/10.1016/j.tourman.2009.08.012
5. Berné, C., García-González, M., García-Uceda, M.E and Múgica, J.M. (2012) Modelización de los cambios en el sistema de distribución del sector turístico debidos a la incorporación de las tecnologías. Cuadernos de Economía y Dirección de la Empresa, 15, 117-129.http://dx.doi.org/10.1016/j.cede.2011.07.002
6. Emmer, R.M., Tauck, C., Wilkinson, S. and Moore, R.G. (1993) Marketing Hotels Using Global Distribution Systems. Cornell Hotel and Restaurant Administration Quarterly, 34, 80-89. http://dx.doi.org/10.1177/001088049303400614
7. Buhalis, D. (2003) Etourism: Information Technologies for Strategic Tourism Management. Financial Times/Prentice Hall, Upper Saddle River.
8. Carroll, B. and Siguaw, J. (2003) The Evolution of Electronic Distribution: Effects on Hotels and Intermediaries. Cornell Hotel &Restaurant Administration Quarterly, 44, 38-50.http://dx.doi.org/10.1016/S0010-8804(03)90257-6

9. Kracht, J. and Wang, Y.C. (2009) Examining the Tourism Distribution Channel: Evolution and Transformation. International Journal of Contemporary Hospitality Management, 22, 736-757. http://dx.doi.org/10.1108/09596111011053837

10. Pearce, D. (1989) Tourist Development. Wiley, New York.

11. Fyall, A. and Garrod, B. (2004) Tourism Marketing: A Collaborative Approach. Channel View Publications, Cleveland.

12. Wang, Y.C. and Fesenmaier, D.R. (2007) Collaborative Destination Marketing: A Case Study of Elkhart Country, Indiana. Tourism Management, 28, 863-875.http://dx.doi.org/10.1016/j.tourman.2006.02.007

13. Buhalis, D. and Law, R. (2008) Progress in Information Technology and Tourism Management: Twenty Years on and 10 Years after the Internet: The State of Etourism Research. Tourism Management, 29, 609-623.http://dx.doi.org/10.1016/j.tourman.2008.01.005

14. Werthner, H. and Klein, S. (1999) Information Technology and Tourism: A Challenging Relationship. Springer-Ver- lag, Wien.

15. Buhalis, D. (1998) Strategic Use of Information Technologies in the Tourism Industry. Tourism Management, 19, 409- 421. http://dx.doi.org/10.1016/S0261-5177(98)00038-7

16. World Travel Market of London (2011) Annual Report. http://www.wtmlondon.com

17. Berné, C., García-González, M.E. and Múgica, J.M. (2012) How ICT Shifts the Power Balance of Tourism Distribution Channels. Tourism Management, 33, 205-214.http://dx.doi.org/10.1016/j.tourman.2011.02.004

18. Leung, S.-O. (2011) A Comparison of Psychometric Properties and Normality in 4-, 5-, 6-, and 11-Point Likert Scales. Journal of Social Service Research, 37, 412-421.http://dx.doi.org/10.1080/01488376.2011.580697

TOURISM AS AN EXIT STRATEGY AT CRISIS TIMES

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ABSTRACT

The contemporary crisis is giving evidence of failing macroeconomic theories and policies, after decades of focusing on the aggregate domestic demand and the role of the public expenditure. The contemporary crisis has shown the weakness of fiscal policy. With very low interest rates, the monetary policy does not seem to provide an alternative exit strategy out of the crisis, too. In this paper we discuss the hypothesis that GDP can still be a reliable estimate of growth. Nevertheless, at crisis times, only if the focus is on the foreign demand like International Tourism Receipts and Exports, and Exports can be an exit strategy. One component of Exports and International Tourism Receipts are worthy of attention. Thanks to a cluster analysis of per year variations of International Tourism Receipts (ITRs), GDP and Exports (World Bank Database) from 2007 to 2011, average positive variations of GDPs are matching with positive ITRs and Exports for "clusters" of countries. Performances of Europe and USA are worse than China, Brazil, India and South Africa and these continents and countries are separated in two different clusters. This result can be related to an increase of trade in emerging economies more than in mature ones, whose exit out of the crisis is much more demanding. The research confirms that Tourism and Exports are having an impact on the growth at different intensities (Europe and America vs. Asia) at crisis times.

Keywords:

Macroeconomics, International Tourism Receipts, GDP, Export, Cluster Analysis

1. Introduction: What's in the Debate

The latest financial and real crisis has given evidence that macroeconomics and macroeconomic policies are not always able to predict, estimate and solve cycles of contemporary economies. Above all, while the domestic demand is falling, neither fiscal policies nor monetary ones seem to provide countercyclical solutions.

According to Stiglitz, standard models are not enough [1] . The government is theoretically outside the system with ancillary impacts on the system itself, and macroeconomic agents are not studied in that depth that includes information symmetries and financial constraints. Two major macroeconomic players are, therefore, misunderstood: the State and the Agent. If the State should be designed in order to have an efficient impact on economies, it is a Leviathan who is suffering by huge debts and spreads, instead. Whoever is the Agent, it is not possible to understand his visions and purposes at the macroeconomic level. Behavioural economics was a big achievement in the understanding of expected utilities, values and behaviours. This microeconomic approach should be pervasively accepted by macroeconomists today more than in the past [2] .

Where is the theoretical network failing? Are there only wrong links or are any nodes breaking down so that links get weaker and weaker and collapse, either?

One of the nodes is the full understanding of demand and supply behaviours. One of the misleading approaches is in the myth of the never-ending growth of both, above all with a modest consideration of their ecological impacts. As a matter of fact, recent and past societies lived of over-consumption. The over-consumption was not ecological and the supply of the

manufacturing industry was not ecological, either. The ecology should refer to the sustainability of supply-chains and consumptions and to their environmental impact. So far, the over-consumption was only able to damage and collapse the ecology. Above all, it showed the fragility of the domestic demand.

As already mentioned, another theoretical node was exaggerated. This was the role of the State or Government. The Giant State is not necessary to an economy that is exhausting resources, especially when the Giant State is an accelerator of this exhaustion. The list of eligible sectors where the State has got a primary role should be also revised. Are we sure that the State should not be limited in the provision of public goods at all? At the same time, arbitrage is nowadays perhaps working better than courts. Neither mercenary soldiers nor a huge public military spending is useful. Public hospitals often survive thanks to multiple transaction costs that accelerate the growth of the public expenditure.

It can be concluded that some nodes and links are abused and extra-nurtured.

On the supply side, GDPs are internationally diminishing. Only some economies are growing at different latitudes. China , Turkey , Poland , Mexico , Brazil are growing though today the growth is continually estimated at lower rates than at the expected ones in 2008 and 2009. On the demand side, domestic consumptions are generally collapsing, though some international trade let some specific industries profit by counter-trends from tele- communication to tourism, from natural resources to refuge goods (gold and the other mining industries).

The tourism industry is foreseen to be leading for some economies that are discovered by new flows of foreign tourists. An ever increasing number of destinations in the worldwide have opened up to and invested in tourism, turning tourism into a key driver of socio-economic progress through exports, the creation of jobs and tertiary industries, and infrastructure development. International tourist arrivals have worldwide shown an uninterrupted growth from 25 million in 1950 to 278 million in 1980, 528 million in 1995, and 1087 million in 2013. International tourist arrivals (overnight visitors) grew by 5% in 2013, reaching a record 1087 million arrivals worldwide, up from 1035 million in 2012, when the 1 billion mark was exceeded for the first time ever. Europe led the growth in absolute terms, welcoming 29 million more international tourists in 2013, and raising the total to 563 million. Growth (+5%) was double the region's average for the period 2005-2012 (+2.5% a year) [3] . This is the Europe where macroeconomic policies, both the fiscal policy and the monetary ones, do not seem able to solve the contemporary crisis.

As a matter of fact, next to the failing Macroeconomic Theory, Macroeconomic policies do not give evidence of any kind of reverse-cyclical impacts. Macroeconomic policies are, instead, unable to stimulate the domestic demand. Both the fiscal policy and the monetary policy are strenuously achieving minor goals than in the past and they are both to be revised and targeted to new goals.

The latest crisis gives evidence that the fiscal policy can be an automatic destabilizer [4] . When there is no possibility of re-design of the public expenditure and this one has been exceeding for decades, the State has inferior roles than in the famous post-1929. Above all, if there is a negative demand shock, if both tax rates are raised and the spending cuts are increased in order to reach the deficit target, a second demand shock will occur, it will reinforce the first shock and will worsen the contraction.

Monetary policy is not of useful help, too. Monetary policy should change targets. Inflation is no longer seen by all as the main target of monetary policy. Stabilising nominal GDP growth would be better. The independence of Banks should be, as a consequence, rewritten. The decision over whether central banks should target inflation or nominal GDP should be

made by politicians, not central banks, alone. Banks should also revise their aptitude to credit crunch.

The aim of this paper is to give evidence that with collapsing traditional macroeconomic agents and macroeconomic policies, the openness is the best reply to the crisis. Especially, tourism can be positively connected to GDPs, if we take into account the impact of International Tourism Receipts and Exports. These ones can restore collapsing estimates and credibility of the measure.

This paper is a revised and expanded version of the paper entitled Rethinking Tourism in Macroeconomics presented at the International Conference on Applied Economics (ICOAE2014), Chania, 3-5 July 2014.

2. GDP, Well-Being and Sustainability

The dominant indicator used to measure growth today is gross domestic product (GDP), which counts the monetary value of all the finished goods and services produced within a country's borders in a specific time period.

Even if GDP is a crucial measurement of growth, it is not all-encompassing. Besides economic resources, the current well-being has to do with non economic resources, with particular attention to the environmental and social ones. GDP is not suitable to grasp some aspects strictly related to the progress and well-being of the people, for example, it does not take into account those assets that do not have a market and does not consider negative externalities (the external costs related to production activities like pollution, unsustainable exploitation of resources, etc.), the quality of public spending, etc.

Recently has aroused the concern that the GDP's emphasis on quantity encourages depletion of social and natural capital and other policies that undermine quality of life for future generations [5] . Moreover, the way in which statistical figures are reported or used may provide a distorted view of the trends of economic phenomena; consequently the political choices could also be inadequate.

The debate on the need to broaden the horizon of current measures of economic performance, especially those solely based on Gross Domestic Product (GDP) has recently led to develop innovative measurement of well- being, taking into account its different aspects: economic, environmental, social, etc.

There is a strong demand in the direction to develop the most appropriate indices to measure progress and well-being of nations: the more accurate the index is, the more adequate the economic and social policies choices could be.

In economic literature, it is possible to find different examples of multidimensional descriptive indicators, built with the aim of measuring well-being and quality of life related to a particular country, region, city, etc. [6] . Each measurement is carried out by combining multiple indicators that focus on the crucial aspects that directly or indirectly influence and determine the quality of life of individuals and communities [7] . The indicators concern education and training, employment, environment, energy, health, human rights, infrastructural equipment, public and private safety, recreational and cultural activities, cultural tourism and related industries.

In summary, there is no single definition of well-being, but rather a set of possible aspects that combine to define the meaning in a comprehensive manner. A detailed list of possible factors that can affect a dimension of individual well-being is necessarily incomplete.

Despite the variety of indicators is already available, a comprehensive assessment of sustainability is difficult to establish in a fully consensual way.

The complexity of the phenomenon is such that, in the strict sense, it does not appear yet possible to reach an actual and definitive measurement.

Despite this brief description on the new approaches can measure growth, in this paper we use a more traditional approach: with the aim to investigate the relationship between tourism and growth we use a cluster analysis of GDPs, International Tourism Receipts and Exports, in order to give evidence that GDPs can be positively impacted by the foreign demand when the domestic one is failing. This has different implications for continents and countries and the cluster analysis can be significant. The background on this relationship is referred to the literature of the export-led growth hypothesis and to recent theoretical models that only consider non-traded goods such as tourism [8] .

The theme is today worthy of attention. In fact, tourism has been transformed to the prevailing industry in the world for a decade.

According to UNWTO, even in the context of the current global economic downturn, tourism remains one of the most promising sectors for reducing unemployment, considering that job creation in tourism tends to outgrow that of other sectors.

3. International Tourism, Export and GDP: A Cluster Analysis of 143 Countries from 2007 to 2011

Tourism can lead the growth of a country, especially, when any other aggregate expense is rather absent and any macroeconomic policy is not able to stimulate the domestic demand. Especially, the international tourism can have a positive effect on economic growth as it increases employment opportunities, personal incomes, taxes, revenues and investment [9] , foreign exchange earnings and, as a consequence, the balance of payment. Tourism stimulates investments in new infrastructures [10] , human capital [11] and technology [12] . Furthermore, tourism stimulates other related industries by direct, indirect and induced effects and causes positive economies of scale and scope [13] . Any tourist can appreciate hotels, transport systems, gastronomy, etc. when he is “experiencing the holiday”. Once the tourist is back in the home-country, he can “extend experiences and shopping” and, as a consequence, he may import “Made in…” from the most appealing destinations [14] with theoretical models and empirical evidence suggesting that tourism can promote trade [15] .

Next to regularly updated data of GDPs, the World Bank usually collects the national accounting of International Tourism Receipts (ITRs) in current US dollars. International Tourism Receipts are expenditures by international inbound visitors, including payments to national carriers for international transport. These receipts include any other prepayment made for goods or services received in the destination country. They may also include receipts from same-day visitors, except when these are important enough to justify separate classification. For some countries they do not include receipts for passenger transport items.

The World Bank database includes Exports of Goods and Services, too. Exports comprise all transactions between residents of a country and the rest of the world involving a change of ownership from residents to non- residents of general merchandise, net exports of goods, nonmonetary gold, and services.

Thanks to a k-means cluster analysis of per year variations ITRs, GDPs and Exports from 2007 to 2011 for 143 countries, ten clusters were significant, but the analysis here will focus only on the most crowded ones (Table 1).

The positive relation of the three variables is evident, when they all grow. Nevertheless, we can appreciate separating performances for European Economies and USA, who were mostly damaged by the crisis in comparison with countries like Brazil, China, India, South Africa or Russia, who showed better performances.

European Economies with United States (USA) are in the most crowded cluster (43.35 percent of the whole sample). From 2008 to 2009, the decline is confirmed both in Exports, International Tourism Receipts (ITRs) and GDPs. From 2009-2010, Exports and ITRs become

positive and GDPs profit by a similar growth. In 2011, GDPs growth is, on average, +9 percent while ITRs increase +9 percent and Exports +16 percent.

In the cluster with Emerging Economies (30.06 percent of the whole sample), we can find Brazil, China, India, South Africa and some other more faster-growing economies than the ones in the previous cluster. This cluster includes Canada, Japan, Argentina and some other countries of the South America (Mexico), too. From 2008 to 2009 all variations are negative. Nevertheless, after 2009, the increasing variations are much more impressive than those ones of the previous cluster. For these countries that were only partially suffering of the crisis, the recovery was faster than in the cluster "Euro Area and USA".

In the cluster "Russia and some other Rich Countries" (8.39 percent of the whole sample), some economies with extra-ordinary performances can be found. The Russian Federation, Saudi Arabia and Oman can be here found. On average, 2008-2009 shows the worst performances of the sample, but afterwards, positive variations are the best of the sample. According to data of the World Bank, ITRs increase +37 percent, Exports increase + 35 percent and GDPs increase +22 percent from 2010 to 2011.

The cluster "MINT and Other Countries" is new evidence. This is a miscellaneous cluster of countries that do not relate to rankings or classifications like BRICS. Indonesia can be here found though it is not matched with other MINT (Mexico, Indonesia, Nigeria and Turkey) countries as in the latest classification by Fraser [16] .

In Table 2, the analysis of variance (ANOVA) is significant for all variations that are listed in Table 1.

During the crisis when macroeconomic policies are not able to cause a shock of the domestic expense or demand, when the public expenditure is to be drastically limited after decades of increasing debts, when domestic consumption and investments are depressed by the fiscal burden and when quantitative-easing is not able to solve the credit crunch, international tourism and exports can provide a positive impact. International Tourists' incoming generates cash-flows during the holiday, the business trip and any other experience of "the foreign land". Next to this primary expense of the tourist, there is a secondary expense of shopping after the holiday. Exports of destinations can only increase.

Elaboration with SPSS Software.

It was here investigated the primary expense of International Tourism Receipts and it was given evidence that positive variations of GDPs are matching with positive variations of ITRs and Exports. The cluster analysis emphasized differences among "regions" or continents. Europe and USA are relatively worse than emerging economies (or faster growing ones of the latest classification). These better performances can be related to an increase of trade in emerging economies more than mature ones. These ones are looking at emerging economies as commercial partners and, as a consequence, most of business trips are targeting emerging economies, in order to reach wealthy consumers and in order to implement partnerships with wealthy investors.

4. Conclusions

Macroeconomics and macroeconomic policies are not solving failures of the contemporary crisis. At the same time, measures like GDPs are showing their methodological weakness in order to estimate growth and well-being.

The cluster analysis of the World Bank database for a sample of 143 countries is aimed to investigate variations of GDPs, ITRs and Exports from 2007 to 2011. This analysis confirms that increasing of ITRs and Exports is matching with increasing GDPs. Nevertheless, there are differences between mature, emerging and rich economies in the speed of this nonparallel growth.

One limitation of this investigation is the combination of International Tourism Receipts and Exports. ITR is the primary expense of the tourist abroad, but Exports do not only include the expenditure after having been abroad. And it is difficult to separate this kind of after-experience expense in the accounting line "Exports".

After months of quantitative easing, USA monetary policy is now turning to tapering. If this trend could be evident of the exit of the crisis, it would be interesting to investigate whether monetary policies might accelerate some mature economies out of the crisis. Either monetary policies can be subsidiary or they can be complementary of the foreign demand. Particularly, the debate is still quite heated in Europe, if monetary polices can play some role in order to enable the recovery. Above all, now that the European Central Bank has approved an unparallel quantitative easing.

Some data of China and Brazil economies are lately contradicting the myth of the accelerated growth.

In conclusion, tourism is positively affecting the exit out of the crisis. Nevertheless, it cannot be forgotten that tourism can also damage economies from pollution to the opportunity costs of industries (especially, the manu- facturing ones), whose growth is not more supported in order to invest in tourism.

Angela Besana, Anna Maria Bagnasco At these hard times and when considering the failure of macroeconomic policies, rethinking the role of tourism in macroeconomics is a binding commitment. This research is an attempt to show the added value of this macroeconomic stabilizer.

References

1. Stiglitz, J.E. (2011) Rethinking Macroeconomics: What Failed and How to Repair It. Journal of the European Economic Association, 9, 591-645. http://dx.doi.org/10.1111/j.1542-4774.2011.01030.x
2. Hoff, K. and Stiglitz, J.E. (2010) Equilibrium Fictions: A Cognitive Approach to Societal Rigidity. American Economic Review, 100, 141-146.http://dx.doi.org/10.1257/aer.100.2.141
3. UNWTO (2014) Tourism Highlights. World Tourism Organization (UNWTO), Madrid.
4. Case, K.E., Fair, R.C. and Oster, S.C. (2012) Principles of Economics. Prentice Hall, Upper Saddle River.
5. Costanza, R., Hart, M., Posner, S. and Talberth, J. (2009) Beyond GDP: The Need for New Measures of Progress. The Pardee Papers, No. 4, Boston University, Boston.http://www.bu.edu/pardee/files/documents/PP-004-GDP.pdf
6. Lawn, P.A. (2005) An Assessment of the Valuation Methods Used to Calculate the Index of Sustainable Economic Welfare (ISEW), Genuine Progress Indicator (GPI), and Sustainable Net Benefit Index (SNBB). Environment, Development, and Sustainability, 7, 185-208. http://dx.doi.org/10.1007/s10668-005-7312-4
7. Costanza, R., Fisher, B., Ali, S., Beer, C., Bond, L., Boumans, R., et al. (2007) Quality of Life: An Approach Integrating Opportunities, Human Needs and Subjective Well-Being. Ecological Economics, 61, 267-276. http://dx.doi.org/10.1016/j.ecolecon.2006.02.023
8. Balaguer, J.M. and Cantavella-Jorda, M. (2002) Tourism as a Long-Run Economic Growth Factor: The Spanish Case. Applied Economics, 34, 877-884.http://dx.doi.org/10.1080/00036840110058923
9. Lee, C.C. and Chang, C.P. (2008) Tourism Development and Economic Growth: A Closer Look at Panels. Tourism Management, 29, 180-192.http://dx.doi.org/10.1016/j.tourman.2007.02.013

10. Sakai, M. (2009) Public Sector Investment in Tourism Infrastructure. In: Dwyer, L. and Forsyth, P., Eds., International Handbook on the Economics of Tourism, Edward Elgar, Cheltenham, 266-280.

11. Blake, A., Sinclair, M.T. and Campos Soria, J.A. (2006) Tourism Productivity: Evidence from the United Kingdom. Annals of Tourism Research, 33, 1099-1120.http://dx.doi.org/10.1016/j.annals.2006.06.001

12. Lemmetyinen, A. and Go, F.M. (2009) The Key Capabilities Required for Managing Tourism Business Networks. Tourism Management, 30, 31-40.http://dx.doi.org/10.1016/j.tourman.2008.04.005

13. Weng, C.C. and Wang, K.K. (2004) Scale and Scope Economies of International Tourist Hotels in Taiwan. Tourism Management, 25, 761-769.http://dx.doi.org/10.1016/j.tourman.2004.06.005

14. Pinna, A.M. (2011) Visit and Buy. An Empirical Analysis on Tourism and Export. CRENoS Centro Ricerche Eco- nomiche Nord Sud Working Paper, Università degli Studi di Cagliari, Cagliari.

15. Gil-Alana, L.A. and Fischer, C. (2010) International Travelling and Trade: Further Evidence for the Case of Spanish Wine Based on Fractional Vector Autoregressive Specifications. Applied Economics, 42, 2417-2434. http://dx.doi.org/10.1080/00036840701858083

16. Fraser, I. (2011) Fidelity Is Confident Its MINTs Won't Suck. Bloomsbury Information.

ENHANCING TOURISM INDUSTRY THROUGH COMMUNITY PARTICIPATION: A STRATEGY FOR POVERTY REDUCTION IN ZANZIBAR, TANZANIA

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ABSTRACT

This study centred on understanding how local communities participate in tourism industry in Bwejuu Village in Zanzibar and the benefit they are getting towards poverty reduction. Specifically, the study identifies tourism industry activities and how local communities participate in improving their livelihoods, find out factors influencing local community participation in tourism sector and lastly, and identify contribution of tourism sector in enhancing local communities' livelihoods. Interviews, observations, documentary reviews and photograph taking are methods employed to the case. The study result shows that tourist hotels, beach, seaweed, historical building archives, diving and snorkeling, sailing boats, coral reefs and lagoons as well as mangrove swamps are some tourist activities in the settlement. Both men and women involves in the tourist activities. The tourist activities noted contributing to local communities' livelihoods in terms of employment creation, leisure, income generation, increased government revenues, schooling, health, house construction and household consumption. However, language barriers, inadequate experience of operators, poor education and training, culture, commitment of actors and poverty level are some constraints highlighted. Following these challenges, the study recommends that the government in collaboration with other development partners interested in tourism industry development may opt to ensure capacity building to local communities and tourist operators in Zanzibar, to review the policy and legislations in place as well as to encourage stakeholder involvement in Tourism sectors as prospects for its development. In conclusion, it can be asserted that if tourism developers believe that local communities will be satisfied if they are used as labourers instead of being ownership of tourism activities. Thus, there is an urgent need to enhance participation and involvement of local communities in tourism sector. These communities must be actively involved in each stage of tourism planning and development in order to ensure that all their tourism activities and products benefits the residents. This will represent a significant step towards ensuring more adequate community participates in the industry, which is essential sector for sustainable local communities' livelihoods improvement and thereby contributing to the national economic growth and poverty reduction agenda in Tanzania and other countries of the same context.

1. Introduction

Tourism is one of the fastest growing industries in developing countries and Tanzania, Zanzibar in particular. The contribution of tourism industry in the global economy is remarkable. According to [1] shows that the tourism industry helps in improving the standard of living, increasing Foreign Exchange Earnings for a country and the Gross Domestic Product (GDP). Other benefits stated include creating jobs and increasing wealth for poor local people and therefore contributing to the alleviation of poverty in a country. This indicates that the tourism industry growth is a high pace in any country growth and development progress and

prospects. Due to tourist industry growth and prospects, competition in the use of tourism resources is likely to expand and understanding how local communities participate in and benefit from the industry towards improving their livelihoods is inescapable debate.

Historically, Zanzibar had monoculture economy dependent on cloves before independence in 1964. Following the decline of production and world cloves selling prices, the Zanzibar Government opted for economic diversification involving investment in agriculture, trading, manufacturing, communication and tourism as the lead sectors after independence [2]. The literature shows strongly the tourism industry in Zanzibar began in the late 1980's. It is still a new industry to grow and sustain a living to Zanzibar residents and the Nation at large. The Government of Zanzibar has deliberate effort to strengthen the role of tourism by encouraging local communities to be involved in the sector and therefore reduce poverty in their families. Other initiative is to enact policy and legislature framework to capture the need, control and coordinate them for effective service delivery to residents [2, 3].

Up to the year 1995 after Zanzibar independence in 1964, no tourism policy framework was in place to guide and coordinate the industry. Some initiative by the Government came into being in the year 1996 and beyond. These include enactment of Tourism Promotion Act of 1996, Preparation of the Tourism Master Plan of 2003 and enactment of Tourism Policy of 2004. Both aim to strengthen the industry for effective management of the sector. However, Zanzibar Strategy for Growth and Reduction of Poverty (ZSGRP) was put in place in the early 2000's as another initiative to reflect the Government commitment for reducing poverty. The strategy among others recognizes Trade and Tourism as leading sectors in the Country development. Tourism industry in the country has proved to be a promising growth sector to the national economy due to its contribution to country development [4].

Despite the fact that tourism is one of the fastest growing industries in the global economy, the industry is continuing facing different challenges. Remarkable challenges include inadequate tourism education, training and awareness, inadequate protection of environment, inadequate funds, inadequate promotion of sector, limited participation of local community, inadequate infrastructures, political interference, energy and crime. These challenges limit the effectiveness of the tourism industry in the world of developing countries. However, Ccommunity participation in tourism industry can play an important role in increasing national income, personal and household income and therefore increasing standard of living of the poor people in both developing and developed countries of the world.

The tourism sector in Zanzibar is too far behind from reaching this goal due to limited community participation in tourism sector [5]. Apparently, the local communities in Bwejuu Village are not actively participating in the tourism industry, not well informed and finally the abject poverty is at increase, despite the abundant tourism resources in their living area [6]. Inadequate local community participation is a major challenge limiting them gaining extended benefits from the tourism industry in Zanzibar. Likely, the consequence of non participation leads to the conflicts and confrontations between tourist investors, government and local people. This situation disturbs the economic growth and development through foreign exchange earnings, creation of employment opportunities, and provision of public revenues.

2. Materials and Methods

Bwejuu is one of the tourist destination Village in Zanzibar. The Village is situated in Eastern Coast in the South District of Unguja, Zanzibar. It is located about 45 Kilometres from Zanzibar Stone Town. The village is located between the Villages of Paje and Jambiani in the south, Michamvi in the north and Ukongoroni in the west. The Indian Ocean borders the Village in the Eastern part. The Villages is easily reachable from Zanzibar city through bus transport numbered 324 (Map 1).

The Villages population has increased from 1842 by the year 2002 to 2050 in the year [7]. The major economic activities performed by inhabitants are fishing, tourism, trade/business, and farming. These activities are main source of employment and income generation and therefore help to sustain livelihood of local communities in Bwejuu Village.

Bwejuu Village was selected due to various reasons with her own potentials existing in the settlement. It is a settlement with community participation in tourism sector. Likely, availability of a wide range of tourism attractions in the Village, diversification of activities and abundant tourist hotels, bungalows and restaurants are other factors giving it its potentials. Similarly, the settlement is along the coastal which surrounded by a very attractive white sandy beach of Indian Ocean, mangrove swamps and coral reefs. In addition, it is a marine recreational area with a diversity of activities including scuba diving, snorkeling, deep sea fishing, sailing boat, lagoons and the offshore inlets, thus it was worth studying for learning.

Simple random sampling was used to explore the case. The type of sampling was selected randomly from the total number of population involved in the Village (Table 1). This type of sampling ensures that any individual element of the population to have an equal and independent opportunity of being selected and also being representative and minimizing sampling biases. Key respondents identified include the Villagers, tour operators, travel agents, tour guide, individuals, central and local government officials (**Table 1**). Likely, purposive sampling was used to compliment simple random sampling. The Vil-

Map 1. Locational map of Bwejuu Village. Source: [8].

Respondents	Male	Female	Total	% of distribution
Villagers	109	86	**195**	68
Tour Operators	20	18	**38**	13
Travel agents	10	10	**20**	7
Tour guide	8	2	**10**	4
Individuals	8	8	**16**	6
Central government staff	2	2	**4**	1
Local government staff	2	2	**4**	1
Total	**159**	**128**	**287**	**100**

Table 1. Sample size of the study.

lage and respondents were purposively selected because of their involvement in tourism activities, attractions and investments. The goal of using purposive sampling was to sample study respondents in a strategic way so that those sampled could be relevant to the research questions that were posed. The two sampling type employed in this study help to fulfils the requirements of efficiency, representativeness, reliability and flexibility. A total of 287 respondents were involved in this study from different categories of respondents as presented in **Table 1**.

Interviews, focus group discussions, photographs and participants observations were tools and methods employed in this study. The key question addressed centred on understanding how local communities participates in tourism industry, how do they benefits and any factors influencing their participation in the sector as a poverty reduction and growth development strategy. Both structured and unstructured interviews were done. Interviews were administered by checklist questionnaire deigned and test during the pilot study. These questionnaires were in form of English. Because of the sensitive nature of this issue the local community participation questions were directed to people who participate in various tourism activities. The questionnaires were also distributed into three categories in order to capture the information about general information of study respondents. These include state of tourism industry in Bwejuu Village, community participation in tourism industry, contribution of tourism sector to community livelihood sustainability and factor influencing the local community participation in tourism sector.

Observation involved a systematic selection, watching and recording the behaviors and characteristics of tourism operations, functions and respondents arguments. It helps in probing and learning more about the tourism, community participation and the realities of study phenomena. It includes observation of tourism activities, social services, poverty issues and daily practical livelihood activities performed in the Bwejuu Village. Using this tool, it helps to capture respondents' attitudes and behaviours as well as to validate the real situation through photograph taking. The investigations use eye technique to observe with note taking during observation on various ongoing tourism events in the Village. These were supplemented by photographing and mapping to validate the information collected during the study. Likely, documentary reviews were done. The nature of reviews centres on understanding policy documents, reports and empirical case studies in the area under investigation. Among them in-

clude [4,9-11], Books, Papers, Journals and web sites. These documented sources were employed to add value and enriching the primary data.

Furthermore, data collected were analysed. These involve data sorting, organizing and coding before computer software entry. Both qualitative and quantitative nature of data were obtained, organized and analysed. The quantitative data types were in form of nominal and ordinal in nature were presented in form of numbers, percentages, frequencies and tables. They were coded and the number of respondents to specific items conveyed by using descriptive statistics. These have been organized and analyzed using Statistical Package for Social Science Version. With regards to the qualitative questions, responses from the participants were grouped according to topic area and the data were categorized into sub-themes. These data were presented in form of text, narratives and direct quotes.

3. Results, Discussions and Synthesis

3.1. Socio-Economic and Demographic Characteristics of Tourist Operators

Age structure

Local communities involving in tourism sector are of different age groups. The study reveals that the age groups between 21 - 30 (28.6%) years of age are highly involve in the tourism industry. This shows that youths are participating actively in tourism sector rather than the rest of other age group (**Table 2**).

Education levels of tourism operators

The study revealed that 46.3% have Secondary Education, 30% with Primary Education, 10.8% have Certificate and Diploma, 1.4% have Degree level and those with no educational background occupy 0.7%, (**Table 3**). This indicates that the majority of tourist operators who

Age Group	Frequency	Percent	Male (%)	Female (%)
18 - 20	77	26.8%	47 (61.0%)	30 (39.0%)
21 - 30	82	28.6%	28 (34.1%)	54 (65.9%)
31 - 40	79	27.5%	58 (73.4%	21 (26.6%)
41 - 50	33	11.5%	22 (66.7%)	11 (33.3%)
51 - 60+	16	5.6%	4 (25.0%)	12 (75.0%)
Total	**287**	**100%**	**159 (55.4%)**	**128 (44.6%)**

Table 2. Distribution of actors by sex and age.

Education level	Frequency	Percent	Cumulative Percent
Primary education level	86	30.0	30.0
Secondary education level	133	46.3	76.3
Certificate education level	31	10.8	87.1
Diploma education level	31	10.8	97.9
Degree education level	4	1.4	99.3
Other education level	2	0.7	100.0
Total	**287**	**100.0**	**100**

Table 3. Education level of respondents.

involve in and benefit from tourism industry have secondary education. Education is one factors which observed strengthening tourist industry in Zanzibar particularly, the ability of residents to speak and write English and other foreign languages.

Residence status and tenure

The study shows that among the 287 total respondents, 231 (80.5%) are residing in Bwejuu Village with permanent land ownership while the rest 56 (19.5%) are tenants. This shows how local Village residents are motivated to participate in the tourism sector, as one of the livelihood activity when they found posssing their own Himes.

Economic activities

Residents living in Bwejuu Village are involving in different livelihood activities (**Table 4**). Among these activities tourism is the second livelihood economic sector after fishing activity as a leading socio-economic activity, which contributes 25.1% on direct employment creation to residents. This implies need for its strengthening for the national economy.

3.2. Tourism Industry Attraction in Bwejuu Village, Zanzibar

Bwejuu Village is a hub of tourism in Zanzibar. The Settlement has different tourism attraction potentials as presented hereunder:

Tourist hotels

Hotels are among the tourism attraction area in Bwejuu Village (Plate 1). Village has a total of 27 hotels including bungalows. Among the total hotels, 17 hotels are owned by foreign investors whereas a total of 10 hotels are owned by Bwejuu residents. These hotels differentiate from one star, two stars, three stars, four stars and five stars. The price levels range according to star. The price of hotels belong to first, second and third star vary from 30 up to 150 USD per day while the price of hotels belong to four and five star range from 200 up to 500 USD per day. One criterion for price allocation depends on the star of a hotel and room type. In regard to operation, the study revealed that a total of 23 of hotels are operated by the foreign investors while 4 hotels are operated by Bwejuu residents who are also owner. Others are hired modalities to foreign investors.

Economic activity	Frequency	Percent	Male (%)	Female (%)
Tourism	72	25.1%	48 (66.7%)	24 (33.3%)
Fishing	77	26.8%	60 (77.9%)	17 (22.1%)
Farming	70	24.4%	28 (40.0%)	42 (60.0%)
Trade	41	14.3%	19 (46.3%)	22 (53.7%)
Other	27	9.4%	14 (51.9%)	13 (48.1%)
Total	**287**	**100.0**	**159 (55.4%)**	**128 (44.6%)**

Table 4. Respondents' economic occupation.

The above shows that Bwejuu community participates in tourist hotels attraction by providing their resources to foreign investors such as building and land. This is reflected to form of participation for material incentive. This level of participation limits local residents to benefit much from tourism sector. In addition, the study revealed that tourist hotel benefits are there but they are limited to only Bwejuu residents employed in the tourism hotels at unskilled cadres with low wages range from 120,000 to 300,000 per month. The study also revealed that

tourist hotel attraction is mainly constraint by inadequate experiences of tourism business, poor tourism education, Islamic rules, culture and seasonality of business.

Beach

Bwejuu Village is surrounded by a lovely white sandy beach of Indian Ocean in its eastern part (Plate 2). The beach is very attractive to tourists and locals. The beach strides approximately 15 kilometres from southern part to northern part of the Village. It is basically free of charge and a public property. The residents participate by forming volunteer groups to clean, protect and maintain Village beach under supervision of Village Shehia Committee. The beach is a source of tourist arrivals in the Village for sun bathing and recreation. Both volunteer groups and Village Shehia Committee enjoy the tourist arrivals so as to improve their livelihood. In view to malpractices of beach as a challenge, the Village Shehia Committee takes responsibility to discipline anybody who pollutes the beach. On other hand, if the beach is in front of the hotels, the hotel owners must take responsibility to preserve and maintain it for hotel tourism purposes.

Seaweed farming attraction

This is an economic activity which is used as a tourism attraction in Bwejuu Village. The sea weed is an economic activity done by women (Plate 3). Bwejuu women participate actively in seaweed farming by being consulted whereas men involve actively in seaweed touring. The incomes accrued from this attraction are shared by both women and men for household obligations including family food expenses, children education, housing, clothes and recreational expenses. The tourists enjoy visiting sea weed farmers and paying a total of 20 USD for a trip. The income ranges from 100 to 150 USD monthly

Plate 1. Some tourism hotel and bungalow attractions in Bwejuu Village.

Plate 2. Bwejuu white sandy beach along Indian Ocean in Zanzibar.

Plate 3. Seaweed farming tour.

at peak season. This activity is carried out only during the sea falling. The study observed that climate change and intensity of extreme weather variability events limits effective operation of seaweed attraction.

Historical building archives in Bwejuu Village

The study revealed that Bwejuu Village was established in 18th century by the immigrants from central part of Unguja Island. During that time, the immigrants saw the historical mosque building, cemetery and miza wa miza caves which are now used as a tourism attraction in the Village. It seems that they were built by Shirazi tribe (Arab). The Bwejuu Village is a multi-ethnic, the majority of its people are black African and minority is Arab and Indian/Asian. They are Muslim and speak Kiswahili. The Arab and Indian had shifted from the Village to Zanzibar Town soon after revolution in 1964[1]. Bwejuu residents participate in control and management of the attraction and receipt of entry fees. Before doing that tour, tour guides originated from the Village use to report to the Village Shehia Leader for information and payment of entry fee. The tourist is required to pay 5 USD for a head as per June, 2012. Both the Villagers and Village Shehia leadership benefit from this attraction. The tourists are also convinced to donate voluntarily in the Village projects. Amongst projects included education, health, water, environmental conservation and management, most vulnerable children, disabled, and the like. The study revealed that this activity is estimated to attract about 2600 tourists per year and generating about 13,000 USD which is used for community development projects including health and education (Plate 4). In fact, this attraction is strictly restricted by the Islamic norms and rules as well as poor commitment of government to develop and maintain historical building at village level and then to educate the villagers on its importance.

Diving and snorkeling

The study revealed that Diving and Snorkeling are attractive features for tourists found in the settlement (Plate 5). The Villagers are talking with tour operators, tour guides and travel agents to organize a special excursion for tourists for diving and snorkeling along Indian Ocean in the Village. In organizing this tour per trip, one tourist is required to pay 40 USD as

a fee to both organizers namely both villagers and tour companies' expenses. During the tourist season, the Bwejuu community members (seasoned diver) normally earn 400 USD per month by participating in this activity. The benefits accrued are mostly spent for household consumptions and maintenance of equipments. In this study, it was basically found that the Bwejuu Villagers get involved actively in and benefited from this attraction through their self-mobilization participation. The problem associated with this attraction is English language skills for seasoned divers.

Sailing boats attraction

The study found that sailing boats is a significant tourist attraction existing in Bwejuu Village (Plate 6). The tourists enjoy sailing boats to travel in the Indian Ocean and exercising sea sports. This attraction is organized in collaboration with both villagers and tour companies. Community members (seasoned fishermen) participate in joint analysis (interactive participation) to perform this attraction. The tourists together with locals enter into a sailing boat driven by nature of Indian oceanic winds to go to and from different places[2]. This activity involves also sea sports. The benefits received are jointly shared by both parties who organize the excursion. A total of 40 USD is paid for a head by a trip. This activity generates 360 USD monthly. It sometimes appears a problem of friendly bargaining benefits-sharing between the two parties as there is no formal agreement. Also, sailing boat is faced by the problem of weather variability events for its prosperity.

Coral reefs and lagoons

The study revealed that coral reefs and lagoons is one area of tourism attraction in Bwejuu Village (Plate 7). The actors involve in this attraction include villagers,

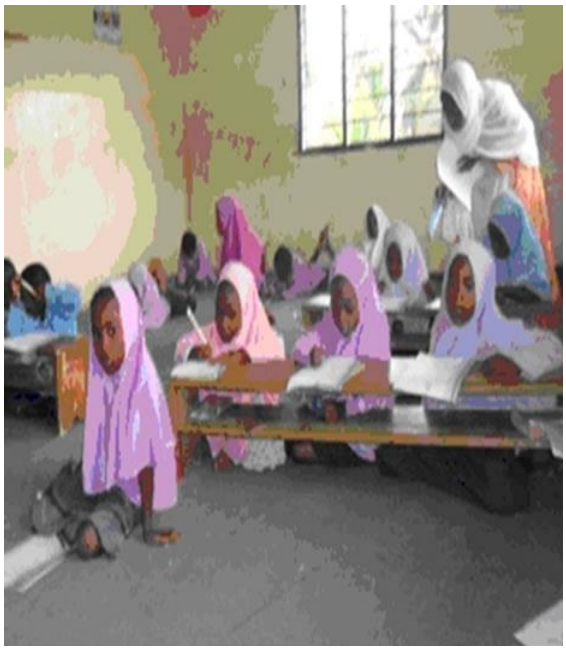

Plate 4. Bwejuu Village health and education projects supported by tourist funds.

Plate 5. Diving and snorkeling tourism activity.

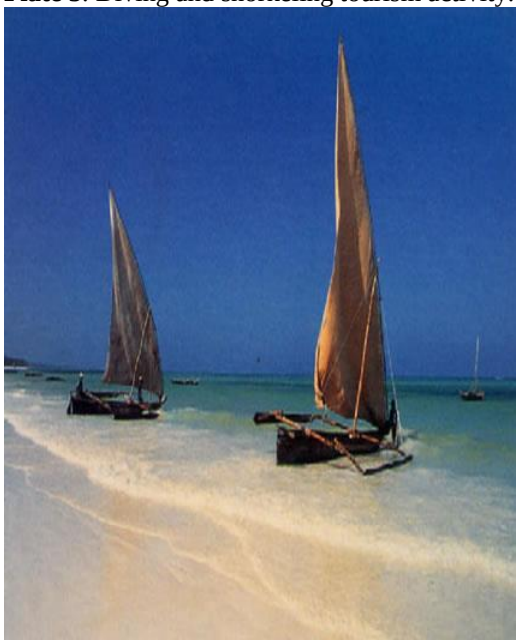

Plate 6. Sailing boats.

Plate 7. Coral reefs and lagoons attraction.

tour guides and tour operators. The Bwejuu Villagers participate actively in sending the tourists to the coral reefs and lagoons areas to see fish breeding and playing in the Ocean while tour operators participate in arranging that tours on other hand. The tourist is required to pay a total of 30 USD per head and villager gets 15 USD per a trip. The villager is projected to generate 450 USD per a month. The local Villagers enjoy incomes from their functional participation in this attraction and spend for livelihood sustenance and food security. The study found that illegal fishing practice, poor tourism education and poverty level of local communities are major problems limiting effective operation of coral reefs and logoons in Bwejuu Village.

Mangroves and swamps attraction

The study found that mangrove swamp is another tourism attraction element in Bwejuu (Plate 8). Mangroves are strange trees that have intricate root systems. This is because the mangrove swamps are in brackish water, a mixture of sea salt water and fresh and grow as an extension of a mother tree. This attracts many tourists to visit a Bwejuu Village to see them. The attraction is found at north-western part in the Village and creates jobs for Bwejuu residents. The Villagers participate actively in and benefit from taking the tourists to go to mangrove swamps attraction for 30 USD per a trip. The entrance is 5 USD for adults and 3 USD for children under 15 years. They are paid to the Village Shehia Leadership and they are spent for both Village Development programs and Mangrove swamps conservation and Management Team. Tour guide gets 90 to 300 USD depending on seasonality. One among the major challenges facing this attraction in its prosperity are bad roads, poverty level of the villagers cutting mangroves for firewood and charcoal, climate change, poor tourism education and commitment of government to protect and maintain it.

The general observation showed that Bwejuu Village is endowed with tourism attractions. The findings revealed that there is positive correlation between livelihood improvement and tourism attraction in Bwejuu Village. This implies that local communities are able to change

their living standards through participation in tourism related activities. **Table 5** shows the contribution of the tourism attractions found in Bwejuu Village and its impact.

Plate 8. Mangrove swamps attraction in Bwejuu Village.

Activities	Area found	Operator	Ownership status	Condition of ownership	Contribution/benefit	
					Family	Government
Tourist hotels	Bwejuu Village	Villagers, travel agents, foreign investors	Sole & Partnership	Adherence with Investment and Tourism Policies and Legislations	Jobs creation Income generations	Foreign exchange earnings, revenues
Beach	Bwejuu Village	Public	Public ownership	As per constitution of 1984	Recreation, sports	revenues
Seaweed	Ocean	Villagers, tour guide	individual	As per constitution of 1984	Jobs creation, Income generation	Foreign exchange earnings
Historical Building Archaives	Bwejuu Village	Villagers, tour guide	*Shehia*	As per constitution of 1984	Jobs creation, Income generation	Foreign exchange earnings
Diving and snorkeling	Ocean	Villagers, tour operators & Foreign investors	Partnership	As per marine and tourism Acts	Jobs creation, Income generation	Foreign exchange earnings
Sailing boat	Ocean	Villagers, tour operators & Foreign investors	Partnership	As per marine and tourism Acts	Jobs creation Income generation	Foreign exchange earnings
Coral reefs and lagoons	Ocean	Villagers, tour operators & Foreign investors	Partnership	As per marine and tourism Acts	Jobs creation Income generation	National income, earnings
Mangrove swamps	Bwejuu Village	Villagers, travel agents	Public ownership	Adherence with Environment and Tourism Policies and legislations	Jobs creation Income generation	National income, Foreign exchange earnings

Table 5. Contribution of the tourism activities in Bwejuu Village.

3.3. Actors, Their Roles and Involvement in Tourism Sector in Bwejuu Village

The study shows different actors involving in tourism activities in Bwejuu Village. Their roles and involvement are presented hereunder.

Government

The study revealed that Government of Zanzibar is a central actor in promoting tourism sector. It plays a great role of management, coordination and supervision of tourism sector in Zanzibar in view to developing and enactment of Tourism policy, legislations and Plans. It also supports local communities to participate in tourism sector and ensure tourism benefits all people. On the other hand, the Government plays a significant part to ensure a conducive environment for all actors involving in tourism activities. The study found that the Government participated actively in tourist hotels attraction to collect hotel levies and registration but it fails to compile and keep tourist records on tourist arrivals and receipts in the Village. The Government faces with the problems of shortage of staff at Village level to enforce laws related to tourism activities, world economic crisis, and shortage of funds for tourism marketing and promotion and poor infrastructures. These problems limit to attract more tourists and increased government revenues.

Tour operators/companies

The study revealed that tour operators/companies participated in tourism attraction sites practiced in Bwejuu Village. These included tourist hotels, diving and snorkeling, sailing boats as well as coral reefs and lagoons attractions. At this category of actors, it was observed that both functional participation and self-initiated mobilization were predominant. It has revealed that the main roles played by tour operators in tourism activities included transportation, booking for accommodation and catering, excursion, entertainment arrangement, as well as marketing and promotion of tourism activities. In performing their duties, tour operators are facing the following constraints that are cancellation of booking by tourists, global economic crisis and security concerns.

Travel agents

Travel agents are crucial actor for developing tourism sector. The study found that the travel agents involved actively in tourist hotel and mangrove swamps attractions in Bwejuu Village. They participate in through both by consultation and for material incentive to execute

their tourism activities. The roles played by travel agents in daily basis are transportation, booking and reservations, air ticketing as well as tourism marketing and promotion. In doing their roles, the study observed that travel agents encountering the challenges of competition and postponement of bookings.

Tour guide

Tour guide was another important area of tourism sector found in this study. The study revealed that tour guides participated in the hotels, historical development of the Village settlement, seaweed farming and mangrove swamps. Their participation was reflected in form of both information giving and consultation. It was also found that a major role played by tour guides was to direct tourists in different places of tourists' interest. In this study, it was observed that tour guides were constraint by the climatic changes and security concerns

Villagers and individuals

The study revealed that Villagers and Individuals were also central actor in tourism sector in their locality. The study found that the villagers were involved in and benefited from all eight tourist attractions found in the Village. These tourist attractions included hotels, beach, seaweed farming, historical building archives, diving and snorkeling, sailing boats, coral reefs and lagoons as well as mangrove swamps. Their participation cut across all levels from passive to self mobilization (active). They play a great role in control, implementation, monitoring and evaluation. The study found that the villagers were faced with the challenges of education, infrastructures, culture, and poverty level.

3.4. Levels of Community Participation in Tourism Industry

The study revealed that 44% of the total respondents agreed that they have been involved actively in the implementation and uses of the tourism attractions and enjoy the benefits. It was also found that 4% of total respondents participated passively. Also, the study found that about 11% of total respondents participated in information giving to tourists in relation to historical building archives, mangrove swamps, seaweed, coral reefs and lagoons. Moreover, the study observed that 9% of the total respondents participated by giving consultation to tourism attractions and 9% of the total respondents participated by functional such as forming associations to coordinate and operate tourism ventures. In addition, 17% of total respondents participated for material incentives such as renting of land and buildings for tourist hotels whereby 6% of total respondents argued that they had participated by interactive through joint ownership and operations of tourist hotels and tour companies (**Table 6**).

Generally, study revealed that local communities in Bwejuu Village participate in different tourist activities. This has contributed to employment opportunities to majority of residents. On the other based on practical reflections, the study revealed that about 77% of the total respondents argued that they had involved actively in the areas of implementation and operationalization of the tourism attractions found in the case study area. It was also found that 7% of the total respondents had participated in monitoring and evaluation of tourist attractions, 6% of the total respondents participated in tourism planning and 5% of the total respondents participated in decision-making as well as coordination and control towards tourism attraction in Bwejuu Village (**Table 7**).

In general, the area of implementation and operationalization of tourism attractions has a great implication in improvement of the livelihood of the villagers since it provides the best room for the actors and villagers in particular, to get jobs and hence generate incomes for their participation.

3.5. Contribution of Tourism Industry in Sustaining Community Livelihoods

The study revealed that tourism industry is of great importance to sustain community livelihoods in the settlement. The following contributions were earmarked.

Employment creation

The study revealed that tourism attractions in Bwejuu Village have been a source of employment for local communities, both women and men of different age groups in Bwejuu Village. The study results indicate that there is

Levels of participation	Frequency of Respondents	Percent
Passive participation	12	4
Participation in information giving	32	11
Participation by consultation	25	9
Participation for material incentive	50	17
Functional participation	25	9
Interactive participation	17	6
Self-mobilization/active participation	126	44
TOTAL	**287**	**100**

Table 6. Levels of community participation in tourism sector in Bwejuu.

positive relationship between tourism activities and benefits such as employment, incomes, revenues, leisure, schooling, health, house construction and household consumption (**Table 8**). The study revealed that 98% of total respondents were employed in the tourist hotels found in Village including 196 males and 86 females. This is an indication that tourist hotels attraction is cornerstone for jobs creation and earnings. This, therefore, has an implication that earnings from employment sustain livelihood of the poor because people are able to meet basic needs and relative needs. One villager said that[3]:

Leisure

The study revealed that 86% of total respondents involved in the study agreed that they have got relaxed from their participation in beach tourism attraction found in the Village (**Table 8**). It was observed that some respondents spare time to send their family along the beach for relaxation and recreational activities. This implies that there is good relationship between community participation and improved livelihood since recreational activities increased day to day in the Village.

Areas of Participation	Frequency of Respondents	Percent
Planning	18	6
Decision-making	13	5
Implementation/operationalization	221	77
Coordination and control	14	5
Monitoring and evaluation	21	7
Total	**287**	**100**

Table 7. Distribution of areas of participation in tourism attractions.

Tourist Attractions	Frequency of Respondents	Male	Female	Percent	Tourism benefits
Tourist Hotels	282	196	86	98	Employment creation, Foreign exchange earnings, school fees Income generation House construction Household consumption
Beach	246	208	38	86	Leisure/recreation sports
Seaweed	172	8	164	60	Income generation Sending school children Household consumption (food), leisure House construction
Historical Building Archives	255	122	133	89	Income generation, school and health fees Schools and health construction
Diving and snorkeling	138	137	1	48	Household consumption Employment creation, Income generation Personal goods and services House construction
Sailing boats	126	124	2	44	jobs creation, Buying household food Income generation
Coral reefs and lagoons	132	131	1	46	Employment creation, Personal goods and services, leisure Income generation
Mangrove Swamps	116	72	44	40	Household consumption Jobs creation, health Leisure, schooling, Income earnings

[3]I feel very joyful with my income generated from tourism activities since I am able to send my children to school and afford my daily household consumption comfortably.

Table 8. Contribution of tourism to community livelihoods in Bwejuu Village.

Generally, the study observes that tourist hotels attraction has a great impact to attract more Bwejuu residents rather than the rest since it provides wide room for their economic livelihood opportunities and active participation in tourism sector.

Income generation and expenditure pattern

The study revealed that it was not very easy work to get accurate income level of respondents involved in this study. The study, therefore, presents only the frequency of respondents by income range who received monthly from their participation in tourism and other activities (**Table 9**). This reflects on impacts of tourism and other activities such as fishing, farming and trading. The study indicates that the income range from tourism activities is at good trend of increase rather than income range from other related activities. This has a great influence on livelihood sustainability of the poor people since their expenditure pattern tends to change due to increased incomes accrued from participation in tourism activities.

The study also revealed that 97% of the total respondents interviewed in this study argue that expenditure pattern has gone simultaneously to income earned in the study area. They also stated that their purchasing power is at increase for both basic needs such as food, clothes, housing and they have owned household assets such as houses with items fridges, radio, TV, beds, cupboards, bicycles, and mobile phones for their participation in tourism activities. This is reflected on the question of assets ownership from participation in tourism activities.

The study found that fishing in Bwejuu Village is a primary source for income generation towards improvement of livelihoods of the inhabitants and poverty reduction at family level (**Table 9**). This is obvious that the Village is along the Indian Ocean. The study also indicates that tourist activities generate more income rather than farming, fishing and trading. This implies that tourism sector has a great impact on sustainable livelihood strategies and hence it is more attractive sector.

Increasing government foreign exchange earnings

The study revealed that tourism industry is one of the key foreign exchange earnings in Zanzibar Government. 87.5% of government staff respondents interviewed argued that tourism contributes significantly to the National GDP about 22%, government revenues about

80%, employment creation about 36,500 direct employments and 201,000 indirect employments, balance of payment, diversifying the economy, and promoting infrastructure projects which also serve other sectors of economy such as fishing, farming and services sector [11].

3.6. Factors Hindering Community Participation in Tourism Activities in Village

Tourism activity in Bwejuu Village revealed to play a great role in terms of improving livelihood of the local communities in Zanzibar as explained in Tables 5 and 8, however there are some remarkable constraints that affect its effectiveness in the Village as explained here under;

Language barriers

The study revealed that 21.6% of the total respondents involved in this study agreed that English is a great constraint hindering Bwejuu Community to participate actively in tourism activities (**Table 10**). This is an indication that the problem of language leads to passive participation and has been reducing income level to sustain livelihood of the Bwejuu communities. It seems that language classes in particular English is crucial for selfinitiated mobilization.

Inadequate experience in tourism business

The study result indicates that 12.1% of total respondents in the study argued that they have participated in tourism business by consultation because they do not have enough experience to run their business competently (**Table 10**). This is evidence that 15% of the total tourist hotels found in Bwejuu Village are managed by the Villagers. This reflects on exclusive aspect and decrease livelihood opportunity. Thus, tourism policy and legislation needs to be reviewed to integrate tourism management experience concern and local community needs.

Inadequate training of various actors on tourism and its operation

The finding reveals that tourism education and aware-

Activity	Frequency of Respondents	Income Range per Month (Tsh)
Tour guiding	10	300,000 - 600,000
Tour operating	38	500,000 - 2,500,000
Travel agency	20	300,000 - 600,000
Farming	72	50,000 - 200,000
Fishing	77	100,000 - 300,000
Trading	41	100,000 - 400,000
Tourist hotel	29	120,000 - 300,000
Total	**287**	

Table 9. Income generation activities.

Problem Identified	Frequency of Respondents	Percentage
Language barriers	62	21.6
Inadequate experience in tourism business	35	12.1
Poor tourism education	55	19.2
Islamic rules and culture	46	16
Poor commitment of tourism actors	30	10.5
Poverty level	59	20.6
Total	**287**	**100.0**

Table 10. Factors hindering community participation in tourism industry.

ness is an important instrument for human development and livelihood. 19.2% of total of respondents agreed that they have not been involved actively in the tourism industry simply because they were not deeply educated and aware of tourism (**Table 10**). This is a major concern hindering community participation in tourism sector in Bwejuu Village. Bwejuu residents are not trained on the advantages and disadvantages of tourism sector despite of plentiful tourist resources surrounded in the Village. This is evidence from the study that Bwejuu residents have employed in the tourist hotels and working in the low cadre skilled positions of employment include housekeeping, cleaning, gardening, driver and security. Thus, capacity building is highly needed to address this constraint.

Islamic rules and culture

It is evident that tourism as an agent of transformation. It can change not only physical and economic conditions but also social and cultural relationships of a community where it has been adopted. Tourists from different parts of the world have different cultures and these tend to influence and change the socio-cultural set up of the host community. The demonstration effect on host communities is often made in clothing, consumption patterns, language and general way of life that tend to imitate the tourists. Zanzibar is of no exception from this. The results of this study indicate that 16% of total respondents agreed that culture and Islamic rules impede participation in tourism activities in the Village (**Table 10**). It was found that cases were presented and discussed before Village Shehia committee and family level to control and minimize antisocial behavior such as way of dressing, robbery, alcohol and prostitution. These things are against their Islamic rules and remain unacceptable in the Village. It was also observed that the Villagers are very much concentrated on their traditional way of life because they fear of tourism threatening local cultures and lifestyle.

Poor commitment of actors

The study revealed that tourism industry has been a source for accessibility to social services and hence improve livelihoods in Bwejuu Village. 10.5% of total respondents in the study argued that poor commitment of actors was an impediment to local community participation in tourism activities and livelihood improvement (**Table 10**). This study revealed that infrastructures such as roads, airports, electricity, water, school, hotels and communication network are prime importance for active participation and lifted livelihood strategies. Therefore, deliberate commitment of tourism actors, government in particular is needed to improve tourism sector, self-initiated participation and livelihoods.

Poverty level

The study revealed that 59% of the total respondents argued that they face challenge to have enough resources especially fund for tourism investment projects although they are willing to actively participate in tourism industry for sustained livelihoods (**Table 10**). This reflects on participation for material incentives as they require resources.

In general, the study observed that in spite of the potentiality for improving livelihood of the local communities and hence reducing poverty level through participation in tourism sector, not all Bwejuu residents participate actively in tourism attraction activities. This situation is caused by the different factors affecting them as identified in **Table 10**. In real practice, these factors have been reducing community participation in tourism activities and improved livelihoods. Specifically, language barriers with 21.6%, poverty level with 20.6% and poor tourism education with 19.2% as the leading factors.

4. Conclusion and Recommendations

This study has shown that the ladder of participation theoretical view underpinning empirical work can have significant effect on the local communities to participate in tourism ac-

tivities for improving livelihoods. This underlines the point that theoretical choice can realize significant and reliable explanation relevant to both the local people's participation in tourism industry and livelihoods sustainability of the local people. This supports Maslow's Hierarchy of Human Needs [12] that people must first meet the basic needs of survival before they can move towards fulfilling higher needs. It was found that the impoverished local communities could not move up this hierarchy owing as well to higher level of participation, amongst other reasons, to the inability of the existing tourism activities and structures to uplift them.

Study indicates that tourism industry can be used as a goal to sustain and improve livelihoods of the poor community and hence reduce poverty at personal, household and national levels. In this study, it is quite evident from the research findings that the inadequate local communities' participation in tourism activities results from both the lack of relevant knowledge amongst the local communities and poor management of tourism activities. Others include language barriers, inadequate experience in tourism business, culture, poor commitment and poverty increase. Hence discovering ways of achieving sustainable local community participation in tourism activities is a challenging task, as there is only inadequate coordination strategy in the study area at present. All in all it has been revealed that local community participation is instrumentally a tool to empower local people so that they can actively influence the process of planning, decision-making that affect their improved livelihoods.

It was revealed that tourism policy has been in place since in 2004 but there was no effective enforcement towards its operations and development. The study has investigated that there is a need to ensure policy review and amendment is in place to capture local community needs and create more conducive enabling environment including policy enforcement mechanism and community participation in tourism attractions for improving their livelihoods.

After critically reviewing these results reflections, the following conclusions were drawn and recommendations made:

The study revealed that both areas stipulated as function requirement are hardly performed in practice as well as poor community awareness on the Act experienced among the respondents interviewed. This shows the need to review in order to create more conducive enabling environment that encourages and empowers community participation in tourism sector at grassroots level and be able to execute the stipulated functions. The main weakness and challenge comes from the area of enforcement of the Act as a serious drawback of engagement opportunity to local people and deficit of tourism government budget to effectively execute responsibilities. These issues are crucial for tourism development and must be integrated into the Act.

In regard to Tourism Policy, The Revolutionary Government of Zanzibar has adopted [9]. This is among the government's strategies and efforts of developing and strengthening the tourism sector in Zanzibar. The objectives of Tourism Policy are;

1) To utilize more effectively the tourism potential to generate more income, human resources, foreign exchange earnings while protecting the environment, Zanzibar culture and traditions.

2) To diversify the tourist attractions in order to achieve a balanced growth of the tourism industry and maximum benefit, and to strengthen the cultural industries including museums, theatres, cultural and community participation as a product diversification to harness tourism.

3) To formulate and develop marketing plans and promotion programs that maximizes the financial revenues, and the economic, social, cultural and environmental positive impacts.

4) To emphasize the fruitful public/private partnership in tourism sector.

5) To contribute to the quality of local people lives.

6) To stimulate the participation of local people of the tourism development process.

It was noted that among the total 287 respondents interviewed 92% were not involved in the formulation and developing the policy. Important issues like Tourism Education, Training and Professionalism are not clearly addressed by the policy and which solely seems to be a setback in empowering local community to have more benefits of their participation in the tourism sector. These facts lead local communities living in tourist attraction areas not sufficiently benefiting from the sector due to policy and legislature constraints.

4.1. Concluding Remarks

The main problem statement established that inadequate local community participation is a major challenge limiting them gaining extended benefits from the tourism related activities within Bwejuu Village in Zanzibar. The study in summary pinpoints the following:

1) The main tourist activities found in Bwejuu Village are tourist hotels, beach, seaweed, historical building archives, diving and snorkeling, sailing boats, coral reefs and lagoons as well as mangrove swamps. In these activities, 98% of the Bwejuu residents were participated in and benefited from these tourist attractions. This study, therefore, concludes that increased local involvement and participation will help to ensure people's empowerment in improvement of local communities' livelihoods.

2) The contribution of tourism sector in sustaining community livelihoods is very remarkable. Eight Tourism attractions found in Bwejuu Village have been a crucial source of sustainable livelihoods for local communities, both women and men of different age groups through employment, leisure, income generation, increased government revenues, schooling, health, house construction and household consumption. This is an indication that 97% of the total respondents interviewed agreed that there is positive correlation between livelihood improvement and tourism activities. The study, therefore, concludes that the tourism sector is essential sector for sustainable livelihoods and thereby contributing to the national development agenda of poverty reduction.

3) Main factors hindering effective community participation in tourism activities performed in Bwejuu Village are language barrier, inadequate experience in tourism business, poor tourism education and training, Islamic rules and culture, poor commitment of actors and poverty level. In real practice, these factors have been reducing Bwejuu residents to participate actively in tourism activities and improved livelihoods. Thus, the study concludes that capacity building programmes are highly needed to overcome these challenges so that local communities participate actively in and benefit more from tourism activities.

In conclusion, it can be asserted that if tourism developers believe that local communities will be satisfied if they are used as labourers instead of being ownership of tourism activities. These communities must be actively involved in each stage of tourism planning and development in order to ensure that all their tourism activities and products benefits the residents. This will represent a significant step forwards in ensuring more adequate community participates in the industry. Policy environment must also be created conducive to encourage local communities to own and engage in tourism activities.

4.2. Recommendations

This study is needed to enhance community involvement in tourism sector. However, there are some remarkable constraints and challenges towards enhancing community participation in tourism sector for improved community livelihoods. In this respect, the study recommends the following strategies:

1) Government may opt to ensure that local communities' involvement and participation in the tourism sector in their living area through tourism education, training and awareness creation programmes. This will help to build trust in planning process, decision-making pro-

cess, coordination and control, implementation, monitoring and evaluation of tourism activities.

2) Tourism policy and legislations need to be reviewed and amended in order to create more conducive enabling environment that encourages and empowers community participation in tourism sector at grassroots level and be able to execute the stipulated functions. This will assist local people to enhance their participation, getting more jobs and improve livelihoods opportunities for their wellbeing and therefore contribute to national efforts in poverty alleviation. These issues are very crucial for tourism development and must be integrated into the favorable development policy and Act.

3) In order to attract more tourists in Bwejuu Village and Zanzibar at large to be a single tourist destination in Africa and world as whole, there should be an imperative need for the government to invest on the construction of infrastructures and facilities shared by both residents and tourists as important features for tourism attractions. This will help to increase government revenues, foreign exchange earnings and poverty reduction at family and national levels.

4) The study suggests that for success of tourism industry in Bwejuu Village and Zanzibar, local communities as central stakeholder should be directly and formally recognized through the policy and hence they should be able to play its significant part.

5) Regarding both language barrier and poor tourism education have been identified as central challenges limiting local people to actively participate in tourism Industry and accessing to tourism employment opportunities and earnings, there should be an urgent need to institute training programmes at the local community level that will ultimately provide opportunities for the local people to be employed in skilled positions/cadres with high remuneration and work professionally.

6) Tourism Village Shehia Committee is of prime importance to be legally established in Bwejuu Village. This will enhance urgent need of community participation in tourism sector for improving their livelihood and poverty reduction efforts.

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REFERENCES

1. WTO, “Developing Sustainable Tourism,” World Tourism Organization, Madrid, 2000.
2. M. Abdalla and S. Othman, “The Role of Tourism in National Development,” Paper Presented at Tourism Seminar on 30 April 1996, North Region, Unguja, 1996.
3. M. Makame and E. Boon, “Sustainable Tourism and Benefit-Sharing in Zanzibar: The Case of Kiwengwa-Pongwe Forest Reserve,” Journal of Human Ecology, Vol. 24, No. 2, 2008, pp. 93-109.
4. United Republic of Tanzania (URT), “Zanzibar Strategy for Growth and Poverty Reduction (ZSGPR),” Ministry of Finance and Economic Affairs, Government Printer, 2007.
5. Zanzibar Economic Bulletin, “A Quarterly Review of the Economy, Vol. 2 No. 4,” Revolutionary Government of Zanzibar, 2009.
6. Y. Ngaga, et al., “Support for Community Based Conservation and Sustainable Use of Natural Resources in Menai Bay, Zanzibar: Mid-Term Evaluation Final Report. Menai Bay Conservation Area (MBCA),” WWF-Tanzania Programme Office, Ravili, Spalding, 1999.
7. United Republic of Tanzania (URT), “Population and Human Settlement Census Report,” Government Printer 2012.

8. Zanzibar Location Map, 2012. www.zanzibartourism.com
9. United Republic of Tanzania (URT), "Zanzibar Tourism Policy," Ministry of Tourism and Trade, Government Printer, 2004.
10. United Republic of Tanzania (URT), "Zanzibar Tourism Promotion Act," Government Printer, 1996.
11. "Zanzibar Tourism Statistical Report," Government Printer, 2011.
12. M. Akunaay, et al., "Community Based Tourism in Tanzania, Potentials and Perils in Practice," 2nd Peace through Tourism Conference, Dar es Salaam, 7-12 December 2003.

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A LATE 20TH CENTURY EUROPEAN CLIMATE SHIFT: FINGERPRINT OF REGIONAL BRIGHTENING?

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ABSTRACT

We investigate the spatial extent of a statistically highly significant shift in atmospheric temperatures over Europe around 1987-1988 using a boot-strap change point algorithm. According to this algorithm, this change point (average warming of about one degree Celsius) is statistically highly significant (p > 99.9999%). The change point is consistently present in satellite and surface temperature measurements as well as temperature re-analyses and ocean heat content over most of Western Europe. We also find a connection with parts of the North Atlantic Ocean and eastern Asia. Although the time of change coincides with the North Atlantic Oscillation (NAO) going from negative to positive, the consistent warmer temperatures throughout the decades after 1987-1988 do not coincide with a persistent shift of the NAO, as it returns to a neutral/negative in the 1990's. Furthermore, the shift does not coincide with any other known mode of multidecadal internal climate variability. We argue that the notion of a shift is "spurious", i.e. the result of a fast change in Europe from dimming to brightening combined with an accidental sequence of cold (negative NAO) and warm (positive) NAO years during this period. The "shift" could therefore be considered as a fingerprint of European brightening during the last few decades.

1. Introduction

In recent decades Western Europe has been warming significantly faster than the world as a whole [1]. No generally accepted explanation for this faster increase in temperatures has been reported, although a decrease in aerosols due to improved air quality as well as circulation changes have been suggested as possible explanations [1-6].

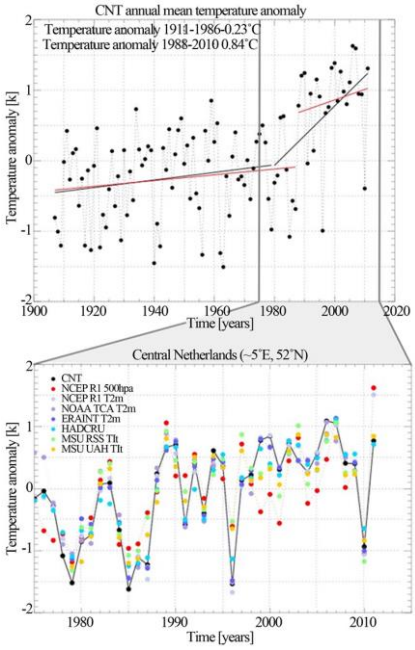
However, a case can be made that this warming has not occurred gradually but it's rather abrupt in the late 1980's. We denote this idea as the "European Climate Shift" or ECS. This shift has been reported for local measurements around the Baltic area [6-8], but its spatial extent has remained unexplored. To illustrate where this idea of an ECS stems from, we present the Central Netherlands Temperature (CNT) record [9]. This homogeneous time series from 1906 onwards is representative for temperatures of a larger area in and around the Netherlands and is specifically constructed to study large-scale temperature changes. The reconstruction accounts for various effects, including changes in measurement method, measurement location and urbanization.

Figure 1(a) shows the CNT temperature record since 1906. Clearly there has been an increase in annual mean temperatures from about 1980 onwards. The temperature trend since 1980 has been 0.42 ± 0.26 K/decade (2σ uncertainty), using an ordinary linear regression. The timing of the temperature increase is consistent with the observed global mean temperature increase, but the magnitude of the warming is much larger than the global mean temperature change over that period [1]. However, even by visual inspection a case could be made that the temperature increase since 1980 is not gradual, but is dominated by a temperature shift around

1987-1988. When calculating trends before and after 1987, we found that the temperature trend from 1906 to 1987 has been 0.04 ± 0.06 K/decade, whereas the trend after 1987 has been 0.15 ± 0.37 K/decade. The change in average temperature before and after 1987 is 1.11 K. When investigating the residual temperatures after removing the trends, there is no clear difference in statistical properties of the residuals and it thus cannot be decided based on this statistic which model is better: a linear trend or a shift plus a linear trend. Hence, the possibility of a climate shift around 1987-1988 remains.

Climate change is generally defined within the framework of statistics. IPCC [10] provides a useful definition of "climate change": "a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer." It is thus important to investigate the possibility of a shift by independent statistical means. In this study we use a well-established change point analy.

Figure 1. (a) Central Netherlands temperature anomaly with regard to the mean temperature from 1906-2011. The black line indicates the ordinary linear regressions before and after 1980, the red line indicates the same regression but before and after 1987. The colored points indicate periods of at least three consecutive years when temperatures for all years were smaller (blue) or larger (red) than half the root-mean-square value of temperature variability between 1906 and 1984. (b) Temperature anomalies with respect to the 1979-2010 mean for seven gridded temperature datasets for the Netherlands grid point for the period 1975-2011, as



well as the Central Netherlands Temperature (black).

sis (CPA) algorithm for the identification of change points. The CPA algorithm used in this study also provides confidence intervals based on the bootstrap. We first subject the CNT record to the CPA algorithm to see if a shift can be identified. We then analyze temperature series over the Netherlands from other data sources using the same methodology for consistency. We extend the analysis to the European domain and end with an analysis of global

patterns to investigate the geographical extent of the ECS, and end with a discussion of possible causes. For all analyses performed and datasets used, we use annual mean temperatures.

2. Methods and Data

2.1. Change-Point Analysis

For the detection of shifts in time series we use the change-point analysis (CPA) procedure [11,12]. The CPA algorithm is a non-parametric change point detection technique, which means that it does not presume certain statistical properties of the data to be analyzed. A bootstrap procedure is applied to estimate significance levels [13]. Change point analysis techniques are commonly used in climate research [14]. The basis of the CPA is the cumulative sum method (CUSUM). The cumulative sum is defined as:

$$S_{\text{year}} = S_{\text{year-1}} + T_{\text{anomaly,year}}$$

In which S_{year} denotes the cumulative sum for a given year and $T_{anomaly,year}$ is the temperature anomaly for a given year with respect to the average of the entire temperature time series. By definition, the cumulative sum at time step zero (S_0) is set at zero. The changes of cumulative sum can be used to determine changes by identifying points where the cumulative sum changes direction.

An important aspect of the identification of a change point is to determine their statistical significance. How can we be sure that a change did not occur by chance? Within the CPA method, statistical significance levels can be determined by using a bootstrap method. First, an estimator of the magnitude of the change is required. For this we use the difference between the minimum and maximum value of the cumulative sum (S).

$$S_{diff} = S_{\max} - S_{\min} \text{ in which } S_{\max}$$

$$= \max\left(S_{i\,i=1,N}\right) \text{and } S_{\min} = \min\left(S_{i\,i=1,N}\right)$$

S_{max} and S_{min} are the maximum and minimum values of the cumulative sum during the period under consideration. We then generate a bootstrap sample of the length of the record by randomly reordering the original record ("sampling without replacement"). This bootstrapped series is then subjected to the CUSUM method again, providing a bootstrapped cumulative sum difference ($S_{\text{diff}}^{\text{Bootstrap}}$). The idea is that "the bootstrap sample represents random reorderings of the data as if no change has occurred". By performing a large number of such bootstraps one gets an estimate of the range of S_{diff} values as if no change would have occurred. With the large number of realizations a confidence interval can be defined, i.e. the number of bootstrapped $S_{\text{diff}}^{\text{Bootstrap}}$ values larger than the S_{diff} represents the chance that the change may have occurred by chance. One particular advantage of a bootstrapping method is that measurement errors are implicitly taken into account: variations in a parameter related to measurement errors are included in the confidence estimates as the original data is continually resampled in the bootstrap method. A disadvantage of the bootstrap is that it is a computationally expensive method: the typical number of bootstraps that is required is 1000 for a given time series and this limitation to 1000 is because of practical reasons. Analyzing multiple datasets would otherwise consume too much time. For example, the calculation of the 5 million resamplings as reported in this study took more than one day of computation on a common

desktop computer. The confidence intervals thus have their own uncertainties, but using 1000 bootstraps is a generally accepted procedure.

Once the CPA method has been applied to the time series, it is split at the change point into two separate time series. For both time series the CPA analysis is repeated again, and so forth until certain criteria are met. In this paper, the criteria we use are the following:

1) The confidence interval must be larger than 95% for positive change point detection.

In general it is assumed that a confidence interval smaller than 95% (two standard errors in case of a Gaussian distribution) indicates that the change cannot be considered different from having occurred by chance. This does not mean that any change with a confidence interval larger than 95% means that a change did occur, but it is a first filter.

2) Time series analyzed for change points contain at least 10 years of data.

The latter is motivated by the notion that we are interested in decadal changes in climate and temperatures (see the definition of climate change in the introduction). Climate variations on shorter time scales are thus filtered out.

2.2. Datasets

All datasets used in this study were obtained from the KNMI Climate Explorer database (http://climexp.knmi.nl). We use the Central Netherlands Temperature record, one of the best documented long term temperature records available [9]. We further use the lower tropospheric satellite temperature records from the Microwave Sounding Unit (MSU) satellites from both the University of Alabama/Huntsville (UAH, v5.4 [15]) and Remote Sensing Systems (RSS, v3.3 [16]), which is available from 1979 onwards. In addition, we also use the National Center for Environmental Protection (NCEP) R1 reanalysis [17] 500 hPa and 2-meter temperature data which starts in 1948. We further use European Center for Medium Weather Forecast interim reanalysis (ERA INTERIM [18]) which starts also in 1979. We also use the combined CRUTEM3 and HADSST2 surface temperature product available at the KNMI climate explorer, both from the Hadley Center in the United Kingdom [19-22], and we use the National Oceanic and Atmospheric Administration (NOAA) PSD Twentieth Century Analysis dataset [23-25]. These last two datasets are the longest available gridded datasets, going back to 1850 and 1870, respectively. For analysis purposes, we also include Ocean Heat Content (OHC) data from the National Oceanic Data Center [26], which starts in 1955. A summary of the characteristics of all datasets is given in **Table 1**.

3. The Central Netherlands Temperature

As outlined earlier, this research was motivated by the visual inspection of temperature records in the Netherlands, which showed warming after about 1980. For illustration purposes, the data was separated into two parts —before and after 1980 (black) or 1988 (red)—and fitted with an Ordinary Linear Regression (OLR). The mean temperature anomalies before and after 1987 are −0.23 and 0.84 K, respectively, resulting in a mean temperature difference of 1.1 K.

Although we could make a case that a shift occurs around 1987, from this visualization we can see that it is difficult to determine which model (linear + linear or linear + shift + linear) is better. The root-mean-square (RMS) of the residuals for the entire interval after sub-

Dataset	Period	Resolution
Central Netherlands Temperature record (CNT)	1906-2011	-
MSU RSS TLT	1979-2011	2.5˚ × 2.5˚
MSU UAH TLT	1979-2011	2.5˚ × 2.5˚
HADCRU T2m	1850-2011	5˚ × 5˚
ERAINT T2m	1979-2011	0.70˚ × 0.69˚
NCEP R1 T2m	1948-2011	1.875˚ × 1.89˚
NCEP R1 T500hPa	1948-2011	1.875˚ × 1.89˚
NOAA PSD TCA T2m	1870-2011	1.875˚ × 1.89˚
NODC OHC	1955-2011	1˚ × 1˚

Table 1. Datasets used in this study, record length and horizontal resolution.

traction of both fits is similar (0.6 K in both cases), so by this means it is not possible to determine which fit is better. The uncertainty intervals of the regressions suggest that only the linear trend after 1980 is significant. However, according to the CPA analysis of the CNT temperature a change occurred in 1988 with a statistical significance of 100%, even when we increased the number of bootstraps to 5,000,000, which would make its significance > 99.9999%. Thus, according to the CPA the possibility of a shift around 1987-1988 is very real and cannot be excluded from a statistical point of view, with —according to the linear regressions—no statistically significant trends before and after 1987. Note that the CPA analysis did not detect any other change point in the CNT series with a significance level larger than 95%.

This result leads to several questions: did this shift occur in other European regions and if so, what was its spatial extent. And was this shift merely seen at the surface or also aloft?

To answer these questions, we applied the CPA to a range of temperature records representative for the location of the Netherlands obtained from gridded surface temperature reconstructions (HADCRU), to reanalysis data (ERA INTERIM, NCEP, NOAA) and satellite data (MSU from UAH and RSS. **Figure 1**(b) shows the time series of all datasets mentioned above for the grid box closest to the CNT location. The statistics of the CPA are summarized in **Table 2**. All datasets clearly identify a change in 1987 or 1988 at the CNT location with high confidence (significance levels vary between 99.1 and 100%), which is not surprising given the correspondence between the temperature anomalies during the period 1979-2010. We thus conclude that the possible 1987- 1988 European Climate Shift is a robust feature in the various datasets.

Before continuing with the analysis of spatial patterns of change points, a few remarks are in place with regard to the CPA methodology. First of all, confidence intervals to some extent depend on the length of the record. For example, the confidence level of the ECS is 100% for the full 1906-2011 CNT record. However, taking only the period 1979-2011, a shift is still detected in 1987 but with a confidence level of "only" 98.5%. The reduced confidence level is related to the fact that for the longer period the algorithm has a better estimate of what the undisturbed variability of the temperature record is. Furthermore, the confidence levels themselves are subject to some uncertainty. Taking a larger bootstrap sample of 10,000 rather than

1000 for the CNT series from 1979- 2011 leads to a confidence level of 98.3%, rather than the 98.5% for the 1000 bootstraps. These results indicate that some care has to be taken with the interpretation of significance levels.

4. Regional and Global Change Point Patterns

Given the presence of a change point in the various temperature records for the Netherlands, the next question is what the spatial extent of this change is. **Figure 2** shows the locations around Europe where a change point was identified in various datasets for 1987 or 1988 and where confidence intervals are larger than 95%. There is a clear agreement among all datasets that the temperature change around 1987-1988 is not a localized but rather a

Dataset	Temperature	Period	Break	CI	ΔT	Lon	Lat
CNT	2 meter	1906-2011	1987	100	1.11	-	-
MSU RSS TLT*	Lower troposphere (~0 - 8 km)	1979-2011	1988 1988	99.7 99.7	0.75 0.82	3.75 6.25	51.25 51.25
MSU UAH TLT*	Lower troposphere (~0 - 8 km)	1979-2011	1988 1988	99.3 99.1	0.99 1.01	3.75 6.25	51.25 51.25
HADCRU T2m**	2 meter	1850-2011	1987 1987	100 100	1.11 1.03	2.5 7.5	52.50 52.50
ERAINT T2m	2 meter	1979-2011	1987	99.3	1.03	5.625	52.28
NCEP R1 T2m	2 meter	1948-2011	1987	99.8	0.84	5.625	52.38
NCEP R1 T500hPa	500 hPa	1948-2011	1987	100	0.81	5.000	52.50
NOAA PSD TCA T2m	2 meter	1870-2011	1987	100	0.98	5.625	52.38

*Statistics for adjacent MSU RSS/UAH point. Due to the MSU 2.5° × 2.5° grid size the Central Netherlands Location more or less falls in between two MSU grids. **CPA statistics for adjacent HADCRU point. Due to the HADCRU 5° × 5° grid size the Central Netherlands Location more or less falls in between two HADCRU grids.

Table 2. Statistics of the 1987-1998 European Climate Shift as derived from the CUSUM algorithm. Indicated are the dataset, temperature altitude, record length, break year, confidence interval (CI) based on a 1000 member bootstrap ("without replacement"), temperature difference between the periods before and after the change (ΔT) and the geographical location of the dataset grid point closest to the Netherlands, in degrees East and North.

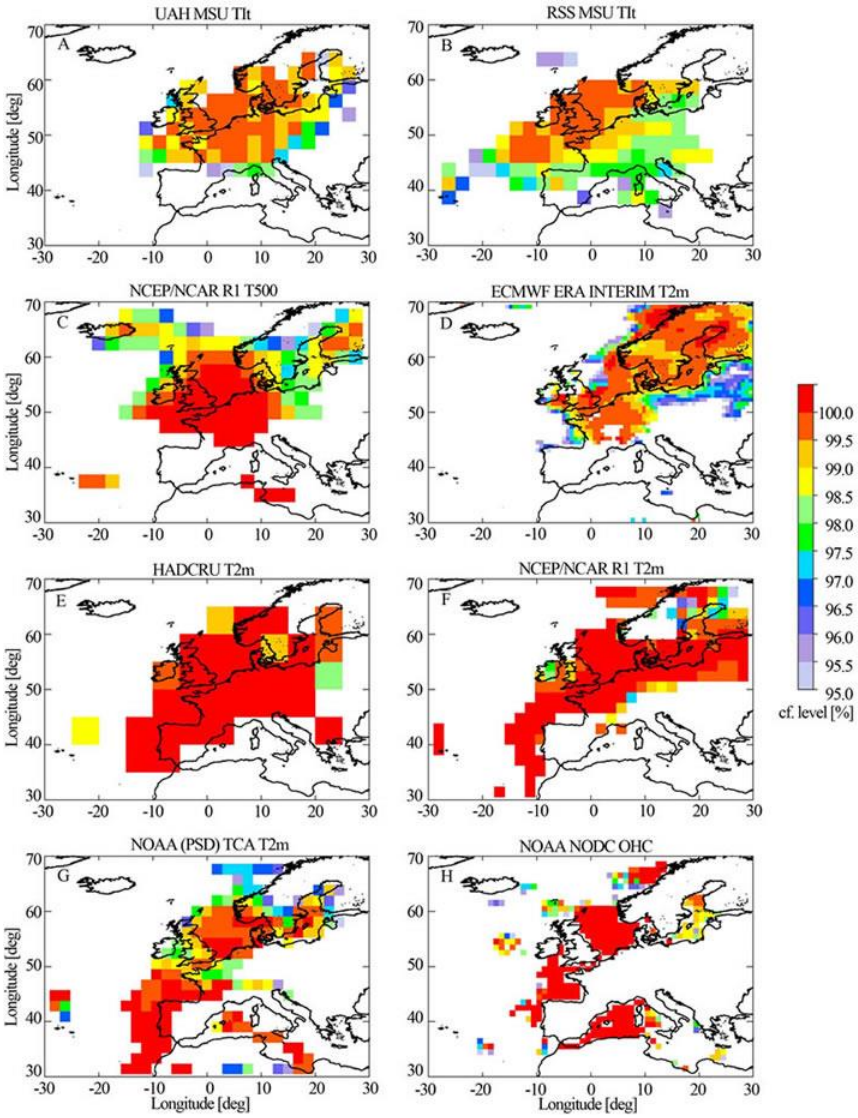


Figure 2. Spatial patterns of the statistical significance of the 1987-1988 ECS for the European domain. Only points with a significance larger than 95% are shown.

regional phenomenon, even visible in Ocean Heat Content data. The area of change stretches between the United Kingdom to central Europe and from the Alps and Pyrenees to southern Scandinavia, but depending on the dataset may include the Baltic area and northern Scandinavia, the northern Atlantic towards Iceland as well as the Iberian Peninsula and the western Mediterranean. Confidence levels are all highly significant, for most of the areas larger than 99%.

The presence of this robust and persistent area of change begs another question: are there other areas outside of Europe that also show a change point around 1987-1988. **Figure 3** shows the global pattern of change points around 1987-1988 and with a confidence interval

larger than 95%. Globally, we now see quite different spatial patterns among the various datasets. Both satellite

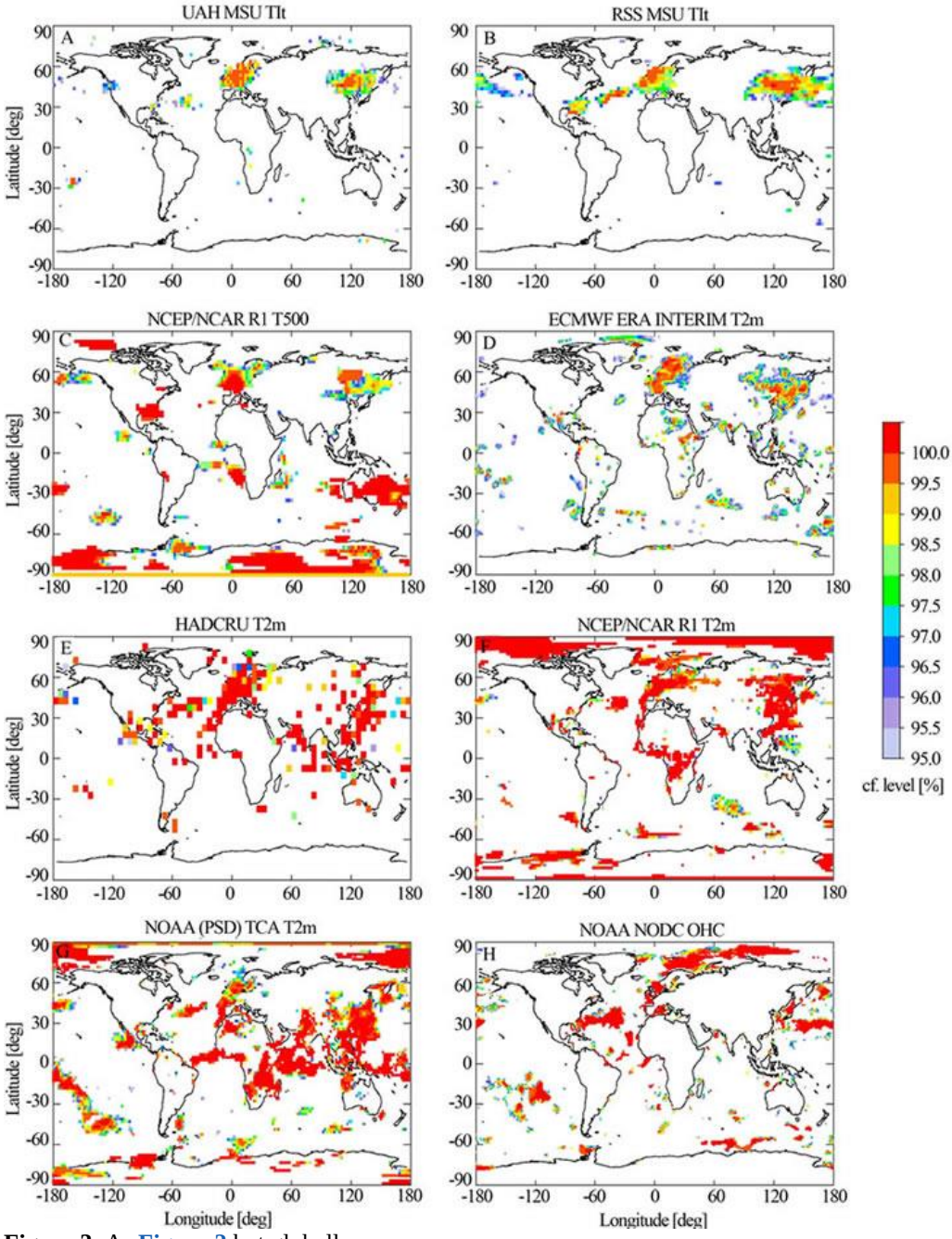


Figure 3. As **Figure 2** but globally.

datasets (A,B) show only a few areas where a change is identified. Apart from Europe a change is identified over a large area in eastern Asia and western Pacific as well as some areas over the northern Atlantic Ocean around 30˚N. The latter is statistically less significant and the two satellite datasets are not in agreement on this. The other datasets agree on the European and East Asia change, but show much more scatter and some spatially coherent patterns not seen in the satellite data. The NCEP 500 hPa reanalysis data (C) shows changes in the subtropical Southern Hemisphere, in particular over Australia, and over Antarctica. The ECMWF ERA interim data (D) shows quite some additional "small scale scatter". HADCRU (E) also shows quite some "scatter". The NCEP reanalysis surface data (F) shows large scale changes in the Arctic as well as over equatorial Africa and over Antarctic. The NOAA TCA data (G) shows large signals in the Tropics and the Arctic, as well as smaller signals around the globe. The OHC (H), finally, also shows a strong Arctic signal and quite some scatter.

Given that the satellite data is—from a spatial point of view—the only record made with the same instrument, one interpretation of these findings is that all other records, either reconstructions or reanalysis data, suffer from inhomogeneities that contaminate long term records. On the other hand, all datasets agree on a Western Europe and an East Asia change, suggesting that both are real in a physical sense.

5. Discussion

The most important finding of our analysis is that a clear case can be made for a European Climate Shift around 1987-1988. All datasets analyzed here consistently show a change in mean temperature over Western Europe before and after 1987-1988, although the spatial extent of this shift varies among the various datasets. There also exists an apparent teleconnection with eastern Asia and the western Pacific, where also a shift is identified during this period.

An obvious legitimate question is what is causing the ECS and if there is a physical one at all. Variations in the NAO do not appear to have contributed much to recent warming in Europe [2] and the NAO is more important for high frequency (interannual) variability than for low frequency (decadal) variability [27].

Figure 4 shows the time series of three different NAO indices for the periods 1900-now and 1975-now. The one feature standing out is the high positive NAO indices in the late 1980's and early 1990s, following a number of years in the mid 1980's with of negative NAO values. It is well established that the winters of 1984/1985, 1985/ 1986 and 1986/1987 were cold in Western Europe which led to relatively low annual mean temperatures whereas the years after that (1988-1990) were all quite warm and that these temperature anomalies are related to variations in circulation patterns and thus the NAO [27]. On the other hand, the NAO index drops to more normal values during the 1990's and thereafter, whereas the positive temperature anomaly remains. Furthermore, no changes in other modes of multidecadal internal climate variability like the Atlantic Multidecadal Oscillation (AMO), the Arctic Oscillation (AO), the Pacific Decadal Oscillation (PDO) and El Nino—Southern Oscillation (ENSO) have been reported around 1987-1988 [28,29]. Given that there has been a general upward trend in temperatures—possibly enhanced by strong reductions in aerosols over Europe, the so-called "brightening" [30]—it is likely that the accidental sequence of a few cold years followed by a few warm years under conditions of brightening results in a temperature sequence that in a statistical analysis is identified as a change point. This is consistent with the notion that NAO predominantly influences high frequency temperature variations, not long-term temperature variations [27]. Combined with the well established turnaround from "dimming" to "brightening" in the mid- 1980's [27], we argue that the shift could actually be considered a fingerprint of European "brightening". The detection of this climate shift should be

viewed as a "spurious" result, i.e. not as a true physical shift in climate, despite its very high statistical significance (at least 5 sigma in our case). The occurrence of this spatial pattern thus could be a consequence of global anthropogenic greenhouse gas forcing, regional aerosol forcing and naturally occurring variations in atmospheric circulation patterns and is thereby fully consistent with the current understanding of the role of anthropogenic aerosols in explaining 20th century global warming [10].

One of the reasons that our statistical analysis results in such a high significance may be that autocorrelation properties of the time series is not preserved using the classical bootstrap method. A method to overcome this problem is to use a block bootstrap [31], in which blocks of data are resampled rather than individual measurement points. The use of blocks ensures that the autocorrelation properties of the data are preserved. The block length depends on the exact autocorrelation properties and can be estimated from the data, which in case of the CNT temperatures is six years. Testing for statistical significance using the block-bootstrap results in significance levels of approximately 97%, which is much smaller than the 5- sigma result from the traditional bootstrap. However, the block-bootstrap turns out to be unstable: the longer the block period, the smaller the statistical significance. Reason is that the CNT data contains one prominent change point, and selecting longer periods increases the possibility that the change point is resampled. This lack of stability indicates that for the time series at hand—non-stationary, autocorrelated and containing one change point— the block-bootstrap is not a suitable method for change point detection.

Further investigation of literature on the use of bootstrap methods suggests that in general no accepted bootstrap methods exist for non-stationary, autocorrelated time series containing change points [32]. On the other hand, **Figure 1** shows that periods of three consecutive years with anomalously higher or lower temperatures do occur (for example 1907-1909; 1922-1924; 1940-1942; 1947-1949; 1959-1961 and 1974-1977). The frequent occurrence of such periods at least renders it possible or even plausible that such a sequence of events accidentally occurred around 1987-1988. Clearly more research is required from the perspective of statistics—in particular for auto correlated non-stationary time series containing change points.

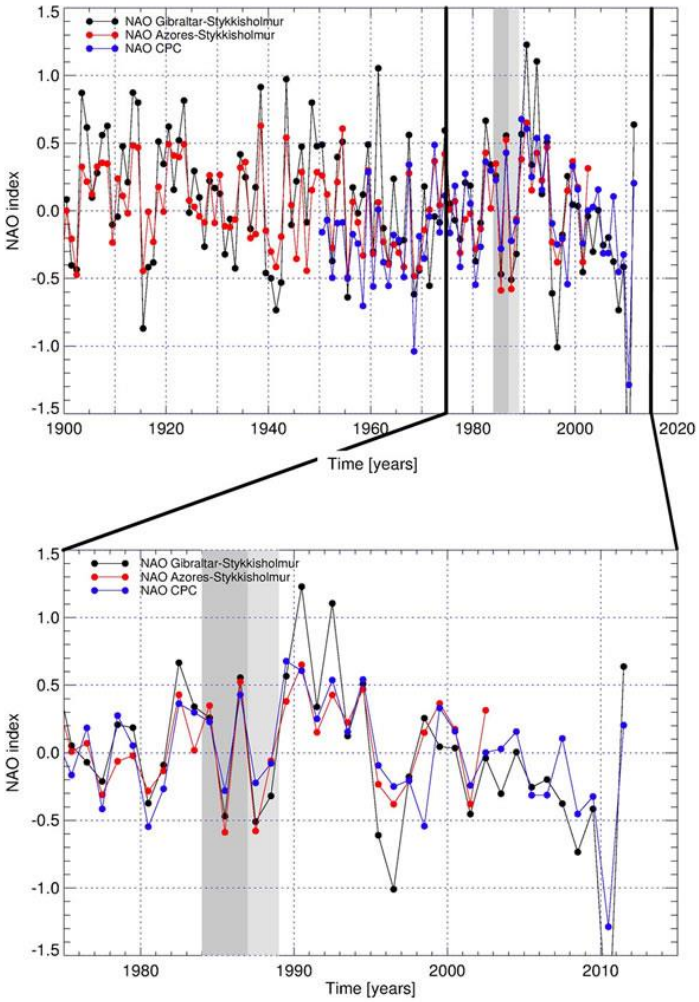


Figure 4. Time series of three North Atlantic Oscillation Indices [35,36]. The upper panel shows the period 1900-now, the lower panel a zoom-in for the period 1975-now. Indicates in grays are the years 1984-1987 (dark) and 1987-1988 (light).

Finally, the analysis of the spatial extent of the ECS also reveals reanalysis data, i.e. data based on many different measurement types and from different sources, suffering from discontinuities which seriously hamper the identification of change points in long records. This is not unexpected, as inhomogeneities in reconstructed data have been reported before [33,34]. However, from the perspective of sudden climate change and shifts in climate modes such contamination hampers the analysis of observational data.

REFERENCES

1. G. J. van Oldenborgh, et al., "Western Europe Is Warming Much Faster than Expected," Climate of the Past, Vol. 5, No. 1, 2009, pp. 1-12. doi:10.5194/cp-5-1-2009

2. G. J. van Oldenborgh and A. P. van Ulden, "On the Relationship between Global Warming, Local Warming in the Netherlands and Changes in Circulation in the 20th Century," International Journal of Climatology, Vol. 23, 2003, pp. 1711-1723. doi:10.1002/joc.966

3. A. P. van Ulden and G. J. van Oldenborgh, “Large-Scale Atmospheric Circulation Biases and Changes in Global Climate Model Simulations and Their Importance for Climate Change in Central Europe,” Atmospheric Chemistry and Physics, Vol. 6, No. 4, 2006, pp. 863-881.doi:10.5194/acp-6-863-2006

4. M. Reckermann, et al., “BALTEX—An Interdisciplinary Research Network for the Baltic Sea Region,” Envonmental Research Letters, Vol. 6, No. 4, 2011, Article ID: 045205.

5. A. P. van Ulden, G. Lenderink, B. van den Hurk and E. van Meijgaard, “Circulation Statistics and Climate Change in Central Europe: Prudence Simulations and Observations,” Climatic Change, Vol. 81, No. S1, 2007, pp. 179-192. doi:10.1007/s10584-006-9212-5

6. S. Keevallik, “Shifts in Meteorological Regime of the Late Winter and Early Spring in Estonia during Recent Decades,” Theoretical and Applied Climatology, Vol. 105, No. 1-2, 2011, pp. 209-215. doi:10.1007/s00704-010-0356-x

7. S. Keevallik and T. Soomere, “Shifts in Early Spring Wind Regime in North-East Europe (1955-2007),” Climate of the Past, Vol. 4, No. 3, 2008, pp. 147-152. doi:10.5194/cp-4-147-2008

8. A. Lehmann, K. Getzlaff and J. Harla, “Detailed Assessment of Climate Variability in the Baltic Sea Area for the Period 1958-2009,” Climatic Research, Vol. 46, 2011, pp. 285-196.doi:10.3354/cr00876

9. G. van der Schrier, A. van Ulden and G. J. van Oldenborgh, “The Construction of a Central Netherlands Temperature,” Climate of the Past, Vol. 7, No. 2, 2011, pp. 527-542.doi:10.5194/cp-7-527-2011

10. IPCC, “Summary for Policymakers,” In: Field, et al., Eds., Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation, Cambridge University Press, Cambridge and New York, 2011. http://ipcc-wg2.gov/SREX/

11. A. N. Pettitt, “A Simple Cumulative Sum Type Statistic for the Change-Point Problem with Zero-One Observations,” Biometrika, Vo. 67, No. 1, 1980, pp. 79-84.doi:10.1093/biomet/67.1.79

12. W. A. Taylor, “Change-Point Analysis: A Powerful New Tool for Detecting Changes,” 2000. http://www.variation.com/cpa/tech/changepoint.html

13. B. Efron and R. J. Tibshirani, “An Introduction to the Bootstrap,” Chapman and Hall, New York, 1993.

14. J. Reeves, J. Chen, X. L. Wang, R. Lund and Q. Q. Lu, “A Review and Comparison of Change Point Detection Techniques for Climate Data,” Journal of Applied Meteorology and Climatology, Vol. 46, 2007, pp. 900-915. doi:10.1175/JAM2493.1

15. J. R. Christy, W. B. Norris, R. W. Spencer and J. J. Hnilo, “Tropospheric Temperature Change Since 1979 from Tropical Radiosonde and Satellite Measurements,” Journal of Geophysical Research—Atmospheres, Vol. 112, No. 6, 2007, Article ID: D06102.doi:10.1029/2005JD006881

16. C. A. Mears and F. J. Wentz, “Construction of the RSS V3.2 Lower-Tropospheric Temperature Dataset from the MSU and AMSU Microwave Sounders,” Journal of Atmospheric Oceanic Technology, Vol. 26, No. 8, 2009, pp. 1493-1509.doi:10.1175/2009JTECHA1237.1

17. E. Kalnay, et al., “The NCEP/NCAR 40-Year Reanalysis Project,” Bulletin of the American Meteorological Society, Vol. 77, No. 3, 1996, pp. 437-470. doi:10.1175/1520-0477(1996)077%3C0437:TNYRP%3E2.0.CO;2

18. D. P. Dee, et al., “The ERA-Interim Reanalysis: Configuration and Performance of the Data Assimilation System,” Quarterly Journal of the Royal Meteorological Society, Vol. 137, No. 656, 2011, pp. 553-597. doi:10.1002/qj.828

19. P. D. Jones, M. New, D. E. Parker, S. Martin and I. G. Rigor, "Surface Air Temperature and Its Variations over the Last 150 Years," Reviews in Geophysics, Vol. 37, No. 2, 1999, pp. 173-199. doi:10.1029/1999RG900002

20. N. A. Rayner, et al., "Globally Complete Analyses of Sea Surface Temperature, Sea Ice and Night Marine Air Temperature, 1871-2000," Journal of Geophysical Research— Atmospheres, Vol. 108, No. D14, 2003, Article ID: 4407. doi:10.1029/2002JD002670

21. N. A. Rayner, et al., "Improved Analyses of Changes and Uncertainties in Marine Temperature Measured in Situ Since the Mid-Nineteenth Century: The HadSST2 Dataset," Journal of Climate, Vol. 19, 2006, pp. 446-469. doi:10.1175/JCLI3637.1

22. P. Brohan, J. J. Kennedy, I. Harris, S. F. B. Tett and P. D. Jones, "Uncertainty Estimates in Regional and Global Observed Temperature Changes: A New Dataset from 1850," Journal of Geophysical Research—Atmospheres, Vol. 111, 2006, Article ID: D12106.doi:10.1029/2005JD006548

23. J. S. Whitaker, G. P. Compo, X. Wei and T. M. Hamill, "Reanalysis without Radiosondes Using Ensemble Data Assimilation," Monthly Weather Review, Vol. 132, No. 5, 2004, pp. 1190-1200. doi:10.1175/1520-0493(2004)132%3C1190:RWRUED%3E2.0.CO;2

24. G. P. Compo, J. S. Whitaker and P. D. Sardeshmukh, "Feasibility of a 100-Year Reanalysis Using Only Surface Pressure Data," Bulletin of the American Meteorological Society, Vol. 87, No. 2, 2006, pp. 175-190. doi:10.1002/qj.776

25. G. P. Compo, et al., "The Twentieth Century Reanalysis Project," Quarterly Journal of the Royal Meteorological Society, Vol. 137, No. 654, 2009, pp. 1-28. doi:10.1002/qj.776

26. S. Levitus, S. I. Antonov, J. L. Antonov, T. P. Boyer, R. A. Locamini and H. E. Garcia, "Global Ocean Heat Content 1955-2008 in Light of Recently Revealed Instrumentation Problems," Geophysical Research Letters, Vol. 36, No. 7, 2009, Article ID: L07608.doi:10.1029/2008GL037155

27. M. Chiacchio and M. Wild, "Influence of NAO and Clouds on Long-Term Seasonal Variations of Surface Solar Radiation in Europe," Journal of Geophysical Research—Atmospheres, Vol. 115, No. D4, 2010, Article ID: D00D22. doi:10.1029/2009JD012182

28. G. Foster and S. Rahmstorf, "Global Temperature Evolution 1979-2010," Environmental Research Letters, Vol. 6, 2011, Article ID: 044022. doi:10.1088/1748-9326/6/4/044022

29. T. DelSole, M. K. Tippett and J. Shukla, "A Significant Component of Unforced Multidecadal Variability in the Recent Acceleration of Global Warming," Journal of Climate, Vol. 24, No. 3, 2010, pp. 909-926.

30. M. Wild, "Global Dimming and Brightening: A Review," Journal of Geophysical Research—Atmospheres, Vol. 114, No. D10, 2009, Article ID: D00D16. doi:10.1029/2008JD011470

31. M. Mudelsee, "Climate Time Series Analysis, Classical Statistical and Bootstrap methods," Atmospheric and Oceanographic Sciences Library, Springer, New York, 2010.

32. S. Smeekes, "Bootstrapping Nonstationary Time Series," Ph.D. Thesis, Maastricht Research School of Economics of Technology and Organizations, Maastricht University, The Netherlands, 2009.

33. A. Sterl, "On the (In) Homogeneity of Reanalysis Products," Journal of Climate, Vol. 17, No. 19, 2004, pp. 3866-3873. doi:10.1175/1520-0442(2004)017%3C3866:OTIORP%3E2.0.CO;2

34. J. A. Screen and I. Simmonds, "Erroneous Arctic Temperature Trends in the ERA-40 Reanalysis: A Closer Look," Journal of Climate, Vol. 24, No. 10, 2011, pp. 2620-2627.doi:10.1175/2010JCLI4054.1

35. P. D. Jones, et al., “Extension to the North Atlantic Oscillation Using Early Instrumental Pressure Observations from Gibraltar and South-West Iceland,” International Journal of Climatology, Vol. 17, 1997, pp. 1433-1450.

36. A. G. Barnston and R. E. Livezey, “Classification, Seasonality and Persistence of Low-Frequency Atmospheric Circulation Patterns,” Monthly Weather Review, Vol. 115, 1987, pp. 1083-1126.

A DECISION METHOD FOR IMPROVING TOURISM INDUSTRY SERVICE QUALITY UNDER BUDGET CONSTRAINTS

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ABSTRACT

Based on the quantitative analysis in Kano model, this paper proposes a model for improving tourism industry service quality from customer satisfaction and cost budget constraints perspectives. Relevant evaluation information is obtained by employing the questionnaire survey and the relationships between customer satisfaction and the fulfillment of service quality elements is determined in Kano model through processing the obtained evaluation information. Then based on the relationship functions, considering the budget constraints, the optimization model of improving tourism industry service quality to maximize the customer satisfaction is constructed, and the budget allocation is determined by solving the optimization model. Finally, a case study is provided to illustrate the feasibility and availability of the proposed method.

Keywords:

Service Quality, Tourism Industry, Decision Method, Kano Model

1. Introduction

Rapid influx of new technology and increased competition has dramatically changed the nature of business process nowadays. To hold a market leadership today, a tourism service enterprise has to put their effort into meeting customer requirements and achieving customer satisfaction to remain competitive advantages. However, the current situation is not so desirable, the complaints of tourism service quality still remain high. The achievement of the best tourism service quality must be viewed as a process of endless improvement, the factors of human features must always be taken into account when developing the market strategy and designing the operational processes.

Some scholars have explored the improvement of tourism service quality from different perspectives. Ting (2011) [1] provided evidence on the existing service quality problems of Three Gorges through an empirical investigation, and also provided some targeted suggestion for how to improve the tourism service quality. Wang (2012) [2] proposed a model called customer perception evaluation model based on customer tourism experience, and pointed that humanistic characteristics, time and the tourism-related are the main factors that affected customer perceptions and attitudes. Using the importance-performance analysis method, Alexandra (2012) [3] analyzed tourist service quality of Great Barrier Reef Marine park in Australia, and also provided some targeted promotion strategy. Chen (2013) [4] discussed the deterioration of travel agencies services quality, and pointed that information asymmetry was the main factor that caused service quality deterioration while travel agencies reputation can significantly improve the service quality. Above studies analyzed different methods of improving tourist service quality, they helped accurately make a more appropriate decision. Nevertheless, the role of customer has also dramatically changed from a passive buyer to value co-creator

there, and also the customers set a higher request to the tourism service quality level. Thus, decision making problems of improving tourism service quality from customers' perspective should be put forward further in-depth and detailed.

Various methods and tools have been developed accordingly to help companies obtain a better understanding of customer requirements, including surveys, focus groups, individuals' interviews, creative groups' interviews, listening and watching, complaint analysis, natural field contacts, warranty data and affinity diagrams [5] [6] . Some customer requirements assessments focus on physical, quantitative product or service attributes; other assessments include subjective feelings and emotions. Although surveys commonly collect customer information, they may be affected by earlier experiences. Thus, direct surveys can produce biased responses, and their results may be misinterpreted. The Kano model has been proposed to address the limitation on assessing customer requirements. This model corrects for customer experience bias and computes the non-linear impact of service elements on customer satisfaction. Kano model is to find out the customers' affection towards products and services through questionnaire and then based on the information as references to improve the customers' satisfaction [7] . However, the model only focuses on the classification method and qualitative descriptions of various relationship curves. Limited quantitative analysis or measurement of relationships is discussed in the traditional Kano model.

Kano model is a widely used tool for understanding the voice of customers and their impact on customer satisfaction. The resources or budget of all enterprise are limited in nature, therefore, reducing costs and improving service qualities are two major strategic approaches for enterprises to stay competitive. However, enterprises must first understand what constitutes the favorite service of customers; the scare resources can then be allocated to the most cost-effective areas.

According to the lack of study on the quantitative analysis of Kano model, this paper proposes a quantitative Kano model by identifying the relationship functions between customer satisfaction and service quality elements fulfillment. Based on the quantitative analysis in Kano model, in the context of and considering cost budget, the optimization model of improving tourism industry service quality to maximize the customer satisfaction is constructed, and the budget allocation is determined by solving the optimization model.

The paper is organized as follows. In the next section, the quantitative analysis of Kano model will be described by identifying the relationship functions between customer satisfaction and quality elements fulfillment. Section 3 will propose an effective mathematical model to assign the limited budget to the most needed service items to optimize the overall service quality. An example based on tourism industry application of this method will be provided to illustrate how the proposed methodology works in practice (Section 4). Finally, a summary of the main contribution and possible future works are provided in Section 5.

2. Review of Kano Model

Kano et al. (1984) developed a two-dimensional model widely used to classify and prioritize customer requirements of a product or service based on how they affect customer's satisfaction. Kano model illustrates the relationship between customer satisfaction and the performance of a product or a service. Using a specific questionnaire, Kano model classified quality elements into five quality dimensions, namely, must be, one-dimensional, attractive, indifferent and reverse. In addition, there is a dimension called "questionable" that contains responses that do not make any logical sense. These quality dimensions are shown in Figure 1. As shows, the x-axis indicates the sufficiency of a given service quality element, and the y-axis indicates customer satisfaction. The more

Figure 1. An overview of Kano model.

the arrow moves towards the right, the greater the extent to which the service element is provided. The more the arrow moves up, the greater the customer satisfaction.

- Must-be elements: Insufficiency of a must-be element results in extreme dissatisfaction, but basic product or service performance is enough to satisfy customer requirements. Customers take must-be elements for granted when they are fulfilled, but high element performance does not generate correspondingly high customer satisfaction.
- One-dimensional elements: A linear function relates product-element performance and customer satisfaction. The higher the level of fulfillment, the higher the degree of customer satisfaction; the reverse is also true. The customer expects these elements, and thus views them as basics.
- Attractive elements: Fulfillment of attractive elements will lead to greater than proportional satisfaction. However, the absence of these requirements does not result in dissatisfaction. These elements are usually not expected and are often currently unaware by customers. They can provide a competitive advantage.
- Indifferent elements: This element will not result in satisfaction or not, whether they are sufficient or not. This type of element is simply a product or service characteristic and not a customer requirement.
- Reverse elements: Non-satisfaction come when reverse elements are sufficient and on the contrary satisfaction come when they are insufficient. A reverse element represents an element that behaves in reverse of the performance quality.

The Kano model employs inquiring techniques with pairs of functional and dysfunctional questions about each requirement; the functional situation considers the element sufficient, while the dysfunctional situation supposes the element to be insufficient [8] [9] . As is shown in Table 1. In a Kano questionnaire, customer is required to choose one of the following responses to express their feelings: 1) I like it; 2) it must be that way; 3) I am neutral; 4) I can live with it; and 5) I dislike it. The classification is then made using an evaluation table in which customer requirement can be classified into one of five dimensions that exhibit different impacts on customer satisfaction depending on whether customer requirements are fulfilled (Table 2). From the evaluation table, Kano model classifies service quality elements into categories that exhibit different impacts on customer satisfaction depending on whether customer requirements are fulfilled. Categories are evaluated and interpreted according to the frequency of answers [10] [11] .

3. Methodology

The decision method to maximize tourism industry service quality under budget constraints features a series of processes including elicitation, analysis, and fulfillment of service quality elements. The quantitative Kano

model can assist decision-making in the process by prioritizing the service quality elements according to their impacts on the customers and producers. A nonlinear mathematical model is developed to combine the various analytical techniques.

3.1. Identification of Service Quality Elements

Kano model requires the survey results of customers' satisfaction using the Kano questionnaire. In general, the questionnaire is designed according to a set of customer requirements. However, the customer requirements tend to be imprecise and ambiguous due to their linguistic origins [12] . And hence it is difficult to apply analytical tools for customer re-

quirements analysis. To allow for unambiguous understanding, the customer requirements are translated into a set of service quality elements. The distinction between customer requirements and service quality elements is in line with the domain mapping principle. Essentially, while providing customer-perceives diversity in customer requirements, the product or service producer must seek for an economy of scale in product or service fulfillment. Surveys are carried out to collect the customers' evaluation of sri according to the functional and dysfunctional forms of Kano questions. The preliminary category of service quality elements is determined using the Kano evaluation table. In this research, a set of 23 items of service quality elements are obtained.

3.2. Division of Market Segments

Very few products or services can be all things to all people; hence, it is important to accurately analyze a market, and then choose the appropriate segment to a target. Customers are grouped into different market segments based on their demographic and psychographic information as well as estimates of consumer purchasing power. In this research, we determine the most commonly used metrics include age, gender and income to segment market. If the division of market segments is not evident, it becomes necessary to carry out market investigations to differentiate the customer groups. Many methods and tools are available to assist the process, such as conjoint analysis, perceptual mapping, and data mining. In this research, the classification results of one market segment are presented for purpose of brevity. Of course, the other market segments can be carried out following the sample procedures.

3.3. Quantitative Analysis of Kano Model

Kano survey is carried out within specific market segments that consist of customers with similar demographic information. With respect to service quality elements, the Kano questionnaire is fabricated and surveys are conducted to acquire the customers' assessment of the service quality elements according to the functional and dysfunctional forms of Kano questions. However, the survey only focuses on the classification method and qualitative descriptions of various relationship curves. Limited quantitative analysis or measurement of the relationships is discussed in the model. To enhance the above aspect, a quantitative Kano model is adopted by identifying the relationships between customer satisfaction and service quality elements.

The Kano model is constructed through customer surveys, where a customer questionnaire contains a set of question pairs for each and every product or service element. The question pair includes a functional form question, which captures the customers' response if a product or service has a certain attribute, and a dysfunctional form question, which captures the customers' response if the product or service does not have that attribute. The questionnaire is deployed to a number of customers, and each answer pair is aligned with the Kano evaluation table, revealing an individual customer's perception of a product or service attribute. The final classification of a product or service element is made based on a statistical analysis of the survey results of all respondents.

After obtaining the classification results, the proposed four-step approach is applied to quantify Kano model.

3.3.1. Calculating CS and DS Values

The proposed quantitative analysis of Kano model starts with calculating two important values, the extent of customer satisfaction (CS) and the extent of customer dissatisfaction (DS) [13] . Since different customers usually have different requirements and expectations, calculating CS and DS values can reflect the average impact of a customer requirement on the satisfaction of all customers. The letter "f_I" in the formula bellows represents the total number of indifferent quality elements.

$$CS_i = \frac{f_A + f_O}{f_A + f_O + f_M + f_I}, \quad DS_i = -\frac{f_O + f_M}{f_A + f_O + f_M + f_I} \quad (1)$$

3.3.2. Determining CS and DS Points

As Figure 1 shows, the x-axis indicates the sufficiency of a given service quality element, and the y-axis indicates customer satisfaction. In this part, we assume that if a certain quality element can be fully fulfilled, the value of x is assumed to be 1 and if a certain quality element will be complete non-fulfilled, the value of x is assumed to be 0. Then the CS point will be expressed as $(1, CS_i)$, while the DS point will be expressed as $(0, -DS_i)$.

3.3.3. Plotting the Relationship Curves

After determining the CS and DS points, the relationship curves between customer satisfaction and service quality element fulfillment can be plotted in Figure 2. The x-axis represents service quality element fulfillment level ranging from 0 to 1. The y-axis represents the degree of customer satisfaction or dissatisfaction ranging from −1 to 1. For instance, the CS and DS points of service quality element 1 are $(1, CS_1)$ and $(0, -DS_1)$, respectively. Since service quality element 1 is an attractive attribute, its relationship curve therefore follows the shape of an exponential curve that passes its CS and DS points. Using a similar approach, the relationship curves for one-dimensional and must-be quality elements are also plotted.

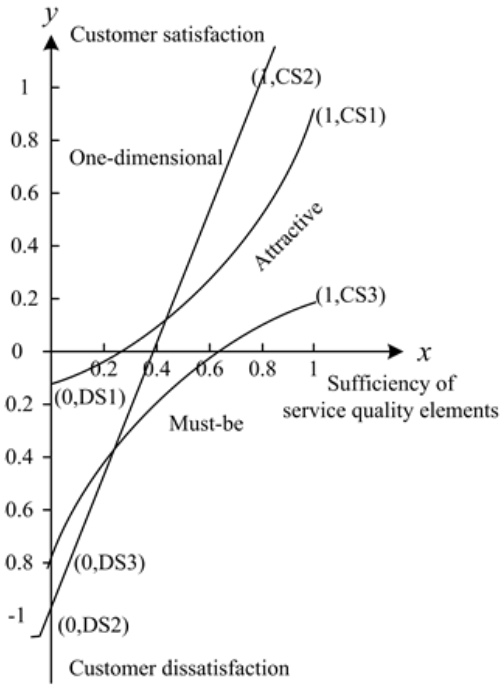

Figure 2. Relationship curves between customer satisfaction and service quality elements fulfillment.

3.3.4. Identifying Relationship Functions

From the above diagram, it can be seen that the relationships between customer satisfaction and service quality elements fulfillment can be approximately quantized by an appropriate

function. Generally speaking, the relationship function can be expressed as $S = f(x, a, b)$, where S denotes the degree of customer satisfaction, x denotes the fulfillment level of service quality elements ranging from 0 to 1, and a and b are adjustment parameters for different Kano categories of service quality elements.

1) One-dimensional quality elements

Regarding the one-dimensional quality elements, the relationship curve can be expressed as $S = a_1 x + b_1$, substituting (1, CS_i) and (0, DS_i) into the equation, it gives that $a_1 = CS_i + DS_i$ and $b_1 = DS_i$ Therefore, the function for one-dimensional quality elements is:

$$S_{oi} = (CS_i - DS_i) x_{oi} + DS_i \quad (2)$$

2) Attractive quality elements

Regarding the attractive quality elements, the relationship curve can be expressed as $S = a_2 e^x + b_2$, substituting (1, CS_i) and (0, DS_i) into the equation, it gives that $a_2 = (CS_i - DS_i)/(e-1)$ and $b_2 = -(CS_i - eDS_i)/(e-1)$. Therefore, the function for attractive quality elements is:

$$S_{ai} = \frac{CS_i - DS_i}{e-1} e^{x_{ai}} - \frac{CS_i - eDS_i}{e-1} \quad (3)$$

3) Must-be quality elements

Regarding the must-be quality elements, the relationship curve can be expressed as $S = -a_3 e^{-x} + b_3$, substituting (1, CS_i) and (0, DS_i) into the equation, it gives that $a_3 = \frac{e(CS_i - DS_i)}{e-1}$, $b_3 = \frac{eCS_i - DS_i}{e-1}$. Therefore, the function for must-be quality elements is:

$$S_{mi} = -\frac{e(CS_i - DS_i)}{e-1} e^{-x_{mi}} + \frac{eCS_i - DS_i}{e-1} \quad (4)$$

3.4. Decision Model Formulation

Based on the relationship function, we can calculate increased satisfaction or decreased dissatisfaction when the sufficiency provided by x from level a to level b resulting from one unit of monetary investment.

1) One-dimensional quality elements

Regarding the one-dimensional quality elements, the relationship curve can be expressed as $S = a_1 x + b_1$, when the sufficiency provided by x from level a to level b resulting from one unit of monetary investment, the increased satisfaction is the area A_o surrounded by points a, b, a', b', and the area can be computed as:

$$A_o = \int_a^b \left[\left(CS_i - DS_i \right) x_{oi} + DS_i \right] \mathrm{d}x_{oi} \quad (5)$$

where A_o is increased customer satisfaction. If a enterprise provides n one-dimensional elements, and if the sufficiency provided by each x_o increases from a_i to b_i, then the level of satisfaction increased by n one-dimensional elements can be expressed as

$$TA_o = \sum_{i=1}^{n} A_{oi} = \sum_{i=1}^{n} \int_{a_i}^{b_i} \left[\left(CS_i - DS_i \right) x_{oi} + DS_i \right] \mathrm{d}x_{oi}, \quad i = 1, 2, \cdots, n \quad (6)$$

where TA_o represents the increase of customer satisfaction. For the ease of demonstration, it is assumed that $a_1 = a_2 = \cdots = a_n = a$, $b_1 = b_2 = \cdots = b_n = b$, the total increased satisfaction TA_o provided by n one-dimensional elements can be simplified as

$$TA_o = \sum_{i=1}^{n} \int_{a}^{b} \left[\left(CS_i - DS_i \right) x_{oi} + DS_i \right] \mathrm{d}x_{oi} \quad (7)$$

2) Attractive quality elements

Regarding the attractive quality elements, the relationship curve can be expressed as

$$S_{ai} = \frac{CS_i - DS_i}{e-1} e^{x_{ai}} - \frac{CS_i - eDS_i}{e-1}$$

, when the sufficiency provided by x from level c to level d resulting from one

unit of monetary investment, the increased satisfaction is the area A_a surrounded by points c, d, c', d', and the area can be computed as:

$$A_a = \int_c^d \left(\frac{CS_i - DS_i}{e-1} e^{x_{ai}} - \frac{CS_i - eDS_i}{e-1} \right) \mathrm{d}x_{ai} \quad (8)$$

where A_a is increased customer satisfaction. If a enterprise provides n attractive quality elements, and if the sufficiency provided by each x_a increases from c_i to d_i, then the level of satisfaction increased by n attractive quality elements can be expressed as

$$TA_a = \sum_{i=1}^{n} A_a = \sum_{i=1}^{n} \int_{c_i}^{d_i} \left(\frac{CS_i - DS_i}{e-1} e^{x_{ai}} - \frac{CS_i - eDS_i}{e-1} \right) dx_{ai}, \quad i = 1,2,\cdots,n$$

(9)

where TA_a represents the increase of customer satisfaction. For the ease of demonstration, it is assumed that $c_1 = c_2 = \cdots = c_n = c$, $d_1 = d_2 = \cdots = d_n = d$, the total increased satisfaction TA_a provided by n attractive quality elements can be simplified as:

$$TA_a = \sum_{i=1}^{n} \int_{c}^{d} \left(\frac{CS_i - DS_i}{e-1} e^{x_{ai}} - \frac{CS_i - eDS_i}{e-1} \right) dx_{ai} \quad (10)$$

3) Must-be quality elements

Regarding the must-be quality elements, the relationship curve can be expressed as

$$S_{mi} = -\frac{e(CS_i - DS_i)}{e-1} e^{-x_{mi}} + \frac{eCS_i - DS_i}{e-1}$$

, when the sufficiency provided by x from level e to level f resulting

from one unit of monetary investment, the decreased dissatisfaction is the area A_m surrounded by points e, f, e' , f' , and the area can be computed as:

$$A_m = \int_{e}^{f} \left(-\frac{e(CS_i - DS_i)}{e-1} e^{-x_{mi}} + \frac{eCS_i - DS_i}{e-1} \right) dx_{mi} \quad (11)$$

where A_m is the decreased customer dissatisfaction. If a enterprise provides n must-be quality elements, and if the sufficiency provided by each x_m increases from e_i to f_i, then the level of dissatisfaction decreased by n must-be quality elements can be expressed as:

$$TA_m = \sum_{i=1}^{n} A_m = \sum_{i=1}^{n} \int_{e_i}^{f_i} \left(-\frac{e(CS_i - DS_i)}{e-1} e^{-x_{mi}} + \frac{eCS_i - DS_i}{e-1} \right) dx_{mi}, \quad i = 1$$

(12)

where TA_m represents the decrease of customer dissatisfaction. For the ease of demonstration, it is assumed that $e_1 = e_2 = \cdots = e_n = e$, , the total decreased dissatisfaction TA_m provided by n must-be quality elements can be simplified as

$$TA_m = \sum_{i=1}^{n} \int_{e}^{f} \left(-\frac{e(CS_i - DS_i)}{e-1} e^{-x_{mi}} + \frac{eCS_i - DS_i}{e-1} \right) dx_{mi} \quad (13)$$

It is known that satisfaction improvement resulting from investment in one-dimensional, attractive and must be quality elements are certainly different. Therefore, the problem is how to appropriately allocate scarce budget to the three elements in order to maximize the overall customer satisfaction. Therefore, the following equation can be formulated.

(14)

TA_o, TA_a and TA_m are the improvement of customer sufficiency obtained from one unit of monetary investment, and C_o, C_a, C_m stand for the individual budget allocated to one-dimensional quality elements, attractive quality elements and must-be quality elements, summation of the three with each multiplied by the amount of investment will become the overall customer satisfaction improvement. The "B" in the above equation is the budget used to promote the overall service quality, constraints one to four must be met. When budgeted, C_o can be improved from a to b with D being the upper limit. When budgeted, C_a can be improved from c to d with E being the upper limit. When budgeted, C_m can be improved from e to f with F being the upper limit. The coefficients of k_1, k_2 and k_3 stand for the relation between budget allocated and the improvement of quality level.

The nonlinear mathematical model is solved by Lingo, and the results are obtained by solving the optimization model.

4. Empirical Study

To demonstrate the performance of the proposed method, an empirical study in tourism industry is given in this section. The Kano questionnaire used in this survey is shown in Table 1, including both the functional and dysfunctional forms. The questionnaire focuses on a set of 23 items of service quality elements, and the form of each item presented is shown in Table 3. A total of 150 customers constituted the Kano survey respondent set. Each customer was required to answer the Kano questions with respect to each and every service quality element. The questionnaire is distributed in the way of face-to-face. Form April 1 through May 30, 2013, 150 copies have been issued and 103copies of effective retrieved (68.7%).

In this paper, the respondents were divided into three groups based on their age, gender, and income levels, representing three market segments as shown in Table 4. Based on the market segments, this tourism industry identifies its target customers, and finally selects market segment 2 as an accurate market. Of course, the other market segments can be carried out following the sample procedures.

Using the traditional Kano method and category definition discussed earlier, the survey results are obtained and summarized in Table 5. According to survey results, short hotel check-in time, short hotel check-in time, comfortable dining environment and appetizing food, comfortable dining environment and appetizing food, distribute the scenic panorama and brochures, distribute the scenic panorama and brochures, public telephones provided, public telephones provided, clear and sufficient road signs and facilities signs, friendly and professional service provided by tourist guide and informs the correlation matters needing attention, are classified as indifferent attributes. Therefore, they will not be included in the further analysis of Kano model in the following sections due to their little impact on customer satisfaction.

Firstly, CS and DS points are determined for each service quality element as shown in the first two columns of Table 6. Based on the final Kano classification in Table 4, suitable equations are then selected to calculate the values of a, b and to determine the basic function for each service quality elements. In this way, all the functions are obtained in the last column of Table 6.

Assuming the budget for quality improvement is 1 million yuan, then the following inequality must be hold, $0 \le C_o \le 100$, $0 \le C_a \le 100$, $0 \le C_m \le 100$. Besides, when $k_1 = 150$, $k_2 = 300$, $k_3 = 100$ and set a = 0.55, c = 0.55, e = 0.55 whereas D = 0.9, E = 0.8, F = 1, then the mathematical model composed of the TA_o, TA_a and TA_m becomes:

The nonlinear mathematical model is solved by Lingo 11.0, and the results are obtained as $C_o = 0.00742$, $C_a = 54.99258$, $C_m = 45$, in other words, $TA_o = 0$, $TA_a = 0.143$, $TA_m = 0.362$, and the overall customer satisfaction is 24.1575.

The result shows that this tourism enterprise should first invest large costs in must-be quality elements to assure an entirely meet. It means the tourist enterprise must ensure its safety of public security and tourist facilities for protects the tourists life and the property security of the greatest degree. What's more, this tourist enterprise should fulfill the service promise accurately to ensure that tourists have sufficient time and suitable tourist route to visit the main attractions. In addition, the rest money should be for attractive quality elements to maximize customer satisfaction. It means this tourist enterprise can improve its service to bring customers pleasant surprise, for example, purchase accident insurance for all tourists, set up tourist shops and train tourist guides.

5. Conclusions

By analyzing the nonlinear relationship between customer satisfaction and performance of products or services, Kano model can obtain the classification of service quality elements. Traditional numeric classification is convenient but too simple, limited quantitative analysis or measurement of relationships is discussed in the traditional Kano model. This paper provides a quantitative Kano model to classify service quality elements, and an empirical study based on tourism industry application will be provided to illustrate how the proposed methodology works in practice. This paper proposes a quantitative Kano model by identifying the relationship functions between customer satisfaction and service quality elements fulfillment. Then based on the quantitative analysis in Kano model, in the context of and considering cost budget, the optimization model of improving tourism industry service quality to maximize the customer satisfaction is constructed, and the budget allocation is determined by solving the optimization model.

For some other tourism enterprise, some suggestions can be drawn from the decision method. Firstly, in order to achieve better service quality, identifying and understanding service quality elements from customer perspective is critical. Secondly, high level of service quality always with high level of costs, accounting for cost constraints in the decision making of service quality improvement is practical and functional. Thirdly, the approach proposed in this paper provides a guideline to maximize service quality, and they can make different sets of parameters to adapt to their own service contexts and practical surroundings.

Nevertheless, there are two major shortcomings, which are worth highlighting for the improvement of the existing approach. First, the function of attractive and must be quality elements are estimated by an exponential function, the validity should be demonstrated by large amounts of data. Second, this study does not consider customer's actual perception importance, which is significant to the enterprise's decision. These shortcomings will be further studied in the future.

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References

1. Kong, T., Kan, R.-L. and Mou, X.-J. (2011) Research on Service Quality Engineering Management of Tourist Destination—Taking the Yangtze Three Gorges for Example. Systems Engineering Procedia, 1, 309-316.
http://dx.doi.org/10.1016/j.sepro.2011.08.047

2. Wang, W.F., Chen, J.S., Fab, L.L. and Lu, J.Y. (2012) Tourist Experience and Wetland Parks: A Case of Zhejiang, China. Annals of Tourism Research, 39, 1763-1778.
http://dx.doi.org/10.1016/j.annals.2012.05.029

3. Coghlan, A. (2012) Facilitating Reef Tourism Management through an Innovative Importance-Performance Analysis Method. Tourism Management, 33, 767-775.
http://dx.doi.org/10.1016/j.tourman.2011.08.010

4. Chen, Y., Barry, M. and Li, Z. (2013) Quality Deterioration in Package Tours: The Interplay of Asymmetric Information and Reputation. Tourism Management, 38, 43-54.

5. Karsak, E.E. (2004) Fuzzy Multiple Objective Decision Making Approach to Prioritize Design Requirements in Quality Function Deployment. International Journal of Production Research, 42, 3957-3974.
http://dx.doi.org/10.1080/00207540410001703998

6. Chan, L.K. and Wu, M.L. (2005) A Systematic Approach to Quality Function Deployment with a Full Illustrative Example. Omega, 33, 119-139.

7. Kano, N., Seraku, N., Takahashi, F. and Tsuji, S. (1984) Attractive Quality and Must-Be Quality. The Journal of Japanese Society for Quality Control, 14, 147-156.

8. Matzler, K. and Hinterhuber, H.H. (1998) How to Make Product Development Projects More Successful by Integrating Kano's Model of Customer Satisfaction into Quality Function Deployment. Technovation, 18, 25-38.

9. Chen, C.C. and Chuang, M.C. (2008) Integrating the Kano Model into a Robust Design Approach to Enhance Customer Satisfaction with Product Design. International Journal of Product, 114, 667-681.

10. Hsieh, K.L. (2009) The Application of Value Analysis Based on Kano's Two Dimensions Model and Value Expansion Model. Information Technology Journal, 8, 1020-1026.

11. Meng, Q.L., Zhou, N.J., Tian, J., et al. (2011) Analysis of Logistics Service Attributes Based on Quantitative Kano Model: A Case Study of Express Delivering Industries in China. Journal of Service Science and Management, 4, 42-51.

12. Jiao, J. and Chen, C.H. (2006) Customer Requirement Management in Product Development: A Review of Research Issues. Concurrent Engineering: Research and Applications, 14, 173-185.
http://dx.doi.org/10.1177/1063293X06068357

13. Berger, C. (1993) Kano's Methods for Understanding Customer-Defined Quality. Center for Quality Management Journal, 2, 3-36.

BIOSPHERE RESERVE AS A LEARNING TOURISM DESTINATION: APPROACHES FROM TASIK CHINI

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ABSTRACT

Biosphere Reserves (BR) are special areas or regions highly recognized for their conservation, logistic functions and sustainable development initiatives. However, not much work has explored into the BRs' roles or functions as tourism learning destination, especially during the early years of their recognition as BR. This article aims to identify the mechanism utilised in the learning tourism function at Tasik Chini Biosphere Reserve since its inception in 2009 to the present year of 2013. The results reveal that learning of science and culture of the locals are the two-tier perspectives utlised in conceptualizing a tourism learning destination. Activities introduced in the specific themes of The Sustainability of Tropical Heritage fulfil the fundamental need of deep learning of scientific research and learning of the BR's ecosystem, while the Ecosystem Health fulfils both deep and surface learning of the young visitors. The cultural knowledge of the community, on the other hand, offers a unique and authentic experience to the learners or visitors. As a learning tourism destination, the learning community, nevertheless, expects that the standard of tourism services should not be marginalised and must meet the high standard of tourism services. It is imperative that the science of Biosphere Reserve and the local culture are linked to set a holistic foundation in the creation of the learning programmes at the Tasik Chini Biosphere Reserve.

1. Introduction

Biosphere Reserves (BR) are highly acknowledged as areas or regions for undertaking learning, reconciling environmental issues and integrating approaches for sustainable development. This is especially apparent in the three complementary and mutual functions of biodiversity conservation; sustainable economic and human development; and logistics support for research, monitoring, education and information exchange [1-4]. During the United Nations Decade of Education for Sustainable Development (UNDESD, 2004-2013), another special responsibility given to the BR is to function as a learning laboratory or learning site, where evidence-based knowledge, iterative and practical principles are utilised to ensure sustainable development [1,5]. This mission and aspiration further demand salient approaches as learners now are not limited to only small groups of locals; instead, it is intended to cater to a wider international community [6,7].

Whilst extensive documentations on successful learning functions or sites provide references to the policy makers and practitioners in the recent years [8-13], what constitutes a good model of a learning destination for a newly endorsed site still remains limited. There is no

agreed and well defined learning destination that offers a holistic orientation and specific-site knowledge. To date, social learning [14], ecosystem approach [9,15] and systems thinking approach [5,16,17], learning tourism destination

(LTD) or TLA (Tourism learning area) [18-20], CARE approach (complexity, aesthetic, responsibility and ethics), edutourism [21] and experiential learning [22] have been introduced to foster the learning of sustainable development. Of specific roles, the Yukon entrepreneurs [23] have created an interactive tool in product development, and further suggest a change from "product" to "programme" and from "tourist" to "participants" in order to enhance the learning experiences, especially for the special niche market, including the educational tourists.

Although the above-mentioned approaches provide alternatives in realizing the learning objectives and functions of the BRs, some limitations on implementations and acceptance of the stakeholders are still apparent because of the diversity of socio-cultural, physical, economic and environmental background of both visitors and educators [24-27]. The existing literature has yet to provide a holistic mechanism that elucidates the roles of the stakeholders in initiating, inventing and developing the Biosphere Reserve experiences as the foundation of tourism learning destination.

Tasik Chini has been accorded as the first Biosphere Reserve in Malaysia in 2009. Rich in diversity of flora, fauna and culture of aboriginal tribe, Tasik Chini is a sensitive area of class 1. As a BR, Tasik Chini has to execute three major functional roles, comprising of development, conservation and logistic functions. Of these roles, providing a learning experience is one of the most important logistic functions. Considering that comprehending the learning approaches in Tasik Chini as a new BR in the Asian region will provide a sharing of sitespecific approaches and knowledge, this article was aimed at identifying the learning initiatives of Tasik Chini Biosphere Reserve and at understanding the learning community's responses to further improve the learning functions of the designated area.

2. Biosphere Reserve as a Learning Destination

2.1. The Science of Biosphere Reserve

Biosphere reserves, as defined by UNESCO, are areas of terrestrial and coastal ecosystems that promote solutions to reconcile the conservation of biodiversity with its sustainable use. Every single BR has to fulfil conservation, development, and logistic support functions; hence, a BR is commonly agreed as a "living laboratory" or "learning place" [3,4,17]. The Seville Strategy elaborates these functions. First is the conservation function which is intended to preserve landscapes, ecosystems, species, and natural resources. Second is the development function which focuses on sustainable economic and human development by considering social, cultural, and ecological issues; and third, the logistic support which is aimed at fostering education, research, and information exchange related to conservation and development of the BR [1].

With the three above aforementioned functions, each BR provides a complete ecosystem that encourages scientific ideas and tools in resolving diverse social-ecological issues. Studies of flora and fauna, ethnobotany of medicinal crops, conservation and forest, wildlife, soil biology and biochemistry of montane habitats as well as hydrology and watershed have been undertaken to comprehend and strengthen the science entity [28-30]. However, sustainable development has become an important function in the mid 1990s, and studies on environmental governance and sustainable development practices have attracted scientists to explore issues on BR [25]. Studies in the Maya forest BR, Long Point and other renowned sites explicitly positioned the science of environmental management and conservation in the biosphere reserve [13,31].

Although it has been the pure sciences that dominated the studies of the BRs, recent works, however, showed a significant integration of multi-disciplines. [32] emphasised that research, and monitoring are fundamental components for the logistics function to provide locationspecific knowledge of ecosystems, local economies, social organizations and governance. These changing roles of logistic functions were found in four biosphere reserves - Long Point, Niagara Escarpment, Mont Saint Hilaire, and Mount Arrow Smith. The research interests have also broadened into the transition zone of biosphere reserves, communities and collaborative approaches.

On a similar vein, [31] offer an alternative for sustainability initiatives emphasising on place-based and integrated-knowledge approaches. These approaches imply a flexible combination of disciplines and types of knowledge in the context of nature-human interactions. They can be operationalised within the framework of sustainability science in three steps: 1) characterize the contextual circumstances that are most relevant for sustainability; 2) identify the disciplines and knowledge that need to be combined to appropriately address contextual circumstances; and 3) decide how these disciplines and knowledge can be effectively combined and integrated. In simple terms, the outcome of the research is relevant to scientific knowledge, and in turn, scientific knowledge makes possible for the practices within the context of local benefit. Furthermore, [3] asserts that a primary platform in learning for sustainable development is the ability to discover new ways in deepening communications with the public, private sector and civil society. All these trends ratify the needs of inventing a mechanism that allow the scientific findings to be transferred to the community and visitors.

2.2. The Learning Approaches of the Learning Sites

It is worth noting the emerging literature on diverse logistic functions of the Biosphere Reserve. The learning and logistic functions exhibit increasingly diverse interests covering topics ranging from purist ecosystem services to the applied researches concerning the visitors' acceptance as well as involvement and benefits of local community. However, recently, there has been a tendency of establishing a learning destination [5,9,14,15,19, 20], and as a result, thematic names of these sites emerged significantly. These initiatives are of various levels - area, region, target audiences and collaborations, including with the higher learning institutions, researchers and school children [24,33-37].

Looking into the initiatives shown in **Table 1**, it is fundamental that each learning approach has a clear and strong foundation of the site-specific knowledge even though rigourous debate on learning about the biosphere reserve is not a new agenda. Since the Seville strategy in the 70s to the Rio Summit in the 1990s, educational and learning objectives have been the focal points of logistic functions of the BRs. Being a special place that has its specific context knowledge, initiatives in documentation of diverse experiences from the newly established biosphere reserve will provide a large pool of resources on learning. To some scholars, experiential and holistic undertakings of both science and local knowledge are their preference. Similarly, educationists also stress on both tacit and explicit knowledge or deep and surface learning [38,39].

Being recognized as a learning site and at the same time, being promoted as an ecotourism destination and key area of sustainable development, most BRs will ensure a unique local knowledge as part and parcel of their logistic functions [40,41]. In this vein, the cultural heritage of the community will become the key focal experience, and authentic landscape will represent a sound product mix of the BRs. Recent trend shows that local and indigenous culture, traditional ecological knowledge and authentic experience are the buzzword in packaging these experiences.

Scholars	Approach	Principle components/Attributes
de la Barre (2005)	Learning travel product development	Learning travel (also known as "educational travel" or "enrichment travel") is a concept. It involves a series of formal and informal learning, travel, and social activities that, when cleverly packaged, engages people in memorable "ad-ventures". Its unique selling proposition is quality-learning experiences, delivered by dynamic resource specialists. Educational travelers are willing to pay a premium for these experiences.
Khelghat-Doost *et al.* (2011)	Regional Centre of Expertise (RCE)	As evidenced in the Regional Centre of Expertise, (RCE) a framework of partnership that fosters capacity building and supports innovative education for sustainable development is proposed. Three key factors are leadership, partnership and networking.
Schianetz, Kavanagh, & Lockington, (2007)	Learning tourism destination	The fundamental elements of a learning tourism destination (LTD) are 1) Shared vision and goals, 2) Information system, 3) Continuous learning and co-operative research, 4) Co-operation (informal collaboration), 5) Co-ordination (formal collaboration), cultural exchange that forms the basis for mutual cooperation 6) acceptance of different worldviews and belief systems, and understanding of these differences which will enhance the dialogue between individuals and within the community, 7) Participative planning and decision making, 8) adaptive management
McCarthy *et al.* 2011	Social learning and sustainability	Promote social learning through sustainability workshops; ensuring an inclusive, open process and providing opportunities for increased public understanding of the purpose and role of the biosphere reserve contribute greatly to social learning.
European Commission	Tourism Learning area	A tourism learning area (TLA) is a concept aimed at improving skills in tourism. It is based on an exchange of learning experiences aimed at increasing quality, innovation and competitiveness within the industry. A TLA consists of a network of all sectors and individuals who contribute to tourism (including local authorities, entrepreneurs, learning institutions, community groups and farmers).
Ministry of Education British Columbia, 2009	CARE concept C.A.R.E. (Complexity, Aesthetics, Responsibility and Ethics)	C.A.R.E. emphasises the interdisciplinary nature of environmental concepts that leads toward deeper engagement with environmental learning in all of its forms. These principles are: Complexity: considering the complexity and interrelatedness of natural and human created systems, and how humans interact with and affect those systems; Aesthetics: developing an aesthetic appreciation for the natural world that encourages students to learn about and protect the environment; Responsibility: providing opportunities for students to take responsible action and explore the environmental impact of their decisions and actions; Ethics: providing opportunities to practice environmental ethics based on an examination of values that can give rise to new visions, possibilities and actions.

Table 1. Approaches on learning destinations.

Another crucial fact is the content of the activities introduced to the visitors. Studies on various BRs' visitors, young school children, families and youth volunteers, confirm the existence of these differences. A project entitled "breakfast: healthy-regional-sustainable" implemented by the Ryon Biosphere reserve has been recognized as a "project of the UN Decade" [11] that introduces children (from year 3) to eat healthily.

The play comprised learning about the groceries they consume, in particular the contents and nutritional values, understanding of healthy eating to climate protection and the values of harmonious family meals. This project, which uses a child-oriented method, employed a "fun" way of bringing various dimensions of healthy eating, social (family) aspects of eating and contribution to the local economy. In contrast, [6] compares the visitor centre in Sweden and Germany's BR, and found that even though the formal way of learning provides ESD contents, touristic and informal learning provide more enjoyment and remembrance.

3 Materials and Methods

3.1. The Study Site

Tasik Chini is the second largest natural freshwater lake in Malaysia. Spanning a total area of 5085 hectares, Tasik Chini was gazetted as a Reserved Area for public use, specifically for tourism activities in 1989 under the National Land Code 1964. **Figure 1** shows the study area. In 2008, a larger overlapping area was designated as a UNESCO Biosphere Reserve, covering the lake catchment area and its feeders, totalling 6951.44 hectares.

The water body comprises of 12 interconnected open water bodies called “laut” by the local Orang Asli communities (Tasik Chini dossier, 2009). The indigenous Jakun tribe lives around the lakeshore and the surrounding areas [42]. The water body of the lake covers an estimated 202 hectares of open water and 700 hectares of riparian and wetland zones. Tasik Chini itself is surrounded by natural hills and lowland dipterocarp forests, disturbed forests, vegetated low hills and undulating land which constitute the watershed of the region.

Due to encroachment of catchment area, forest clearing, incompatible land use, and lack of clear guidelines for management and conservation, Tasik Chini suffers from extreme environmental degradation [43]. Considering that strong scientific research can serve as a platform to conserve and restore Tasik Chini, the Tasik Chini Research Centre (TCRC) was established in 2004. With Tasik Chini accorded the status of a UNESCO Biosphere Reserve, environmental problems need to be addressed, and restoration needs to be enhanced. In fact, it should be suitably managed, and re-established as the premier resource-based tourism destination as well as a living laboratory for research and education in Malaysia. Hence, with the situation described above, Tasik Chini has extensive resources as a Learning Destination of Biosphere Reserve.

3.2. Data Collection and Analysis

This study used a mixed method approach and the following data collection was utilized in comprehending the approaches initiated in Tasik Chini. The first was the data bank of the TCRC; which provided information regarding the series of events held from 2008 to 2013. The

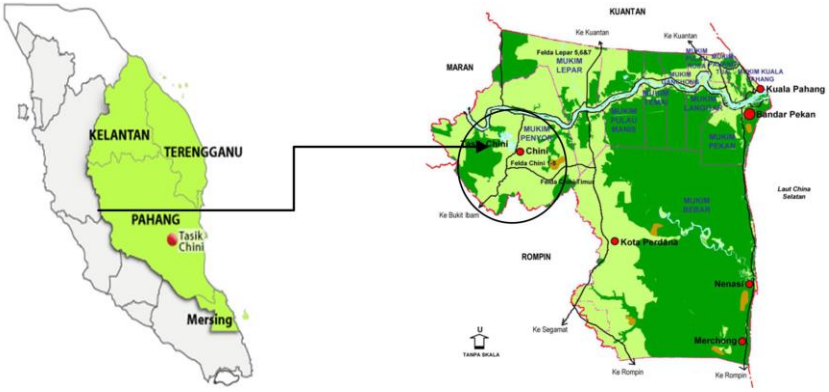

Figure 1. Location of the Study Area, Tasik Chini Biosphere Reserve.

data provided all events or programmes held at and by the research centre, and among others, included the proposals, event reports and program book. The data has helped the authors to classify and map events into knowledge orientation, scientific and play entity, duration, location and learning objectives as well as to identify the learning community—the participants and experts involved.

The data were further divided into two stages, comprising of events during pre-dossier and events during pre-establishment of the Biosphere Reserve as well as recent events hosted by this site. The second was the qualitative data derived from various in-depth interviews with local stakeholders, participants in the focus group discussion and public consultation. The third was utilisation of the surveys conducted during each programme, especially to derive the participants’ feedback, satisfaction and understanding of the overall programmes held and experienced.

4. Results and Analysis

4.1. The Learning Approaches from Tasik Chini

4.1.1. Learning of the Science of Biosphere Reserve

As revealed, learning is one of the logistic functions of BRs; and thus, Tasik Chini has initiated knowledgebased programs in order to promote and provide site specific knowledge and experiences. Since its inception in 2009, a total of 14 programs have been conducted up to August 2013 during the pre-dossier preparation, preestablishment and post establishment, as depicted inTable 2.

Each programme provided a thematic understanding of the BR. To ensure visitors have satisfactory experience, each programme was tailor-made according to the educational background, travel motives and duration of visit. Scientific aspects were sought from experts in the pure science and social sciences, especially in terms of knowledge, real-life experiences and hospitality of the locals. These experts provided in-depth knowledge of the major domains of the ecosystem—the lake, hydrology, forest, tourism, aborigines and culture as well as conservation initiatives, which were later moulded into holistic knowledge of this BR [44].

4.1.2. The Sustainability of Tropical Heritage

As a host, Tasik Chini is proactively developing a site specific theme of learning ecosystem. A specific theme, namely namely "The Sustainability of Tropical Heritage" is used in hosting the mobility program. A framework of learning culture in four-dimensional perspectives is utilized in this programme. **Figure 2** shows the four-dimensional perspectives of the learning culture in Tasik Chini Biosphere Reserve (TCBR). Based on the details of the

Year of event		Name of event	Medium of interaction	Location	Level of event	Mode of the Learning Destination
Pre-dossier preparation	2004	Tasik Chini Expedition 2004	On site experience	At the destination	State	Scientific expedition and Real experience
Pre-establishment of Tasik Chini as BR	2008	Public consultation events and World café Booth	Booth and event that stages the Tasik Chini Biosphere reserve	At the destination	National	Science of Biosphere reserve, conservation, development and education
2) Post establishment and Current events	2009	Adopted Village of UKM	Booth and play	Johor, outside destination	State	Informed knowledge
	2010	Celebrating UKM's 40 Years	Booth and hands on activities	Bangi, Universiti Kebangsaan Malaysia	University	Disseminating knowledge to public and educational institution audience
	2010	Mobility program	On site experience, lake, forest and community living	At the destination	International	Science and play to international students
	2011	UNESCO DAY	Booth and event	Kuala Lumpur, capital city	National	Disseminating knowledge to public and international audience
	2011	Mobility program	On site experience, lake, forest and community living	At the destination	International	Science and play to international students
	2011	Knowledge ecotourism event	Booth and talk	Bangi, UKM	National	Disseminating knowledge to public, tourism providers and ministry
	2012	Mobility program	On site experience, lake, forest and community living	At the destination	International	Science and play to international students
	2012	Scientific visit	On site experience, lake, forest	At the destination	Regional	Science based activities
	2012	Educational workshop	On site and living lab	At the destination	State	Science based activities
	2013	Composting awareness and knowledge transfer	On site and living lab	At the destination	Local	University-Community Engagement

Table 2. Events Hosted by Tasik Chini, 2004-2013.

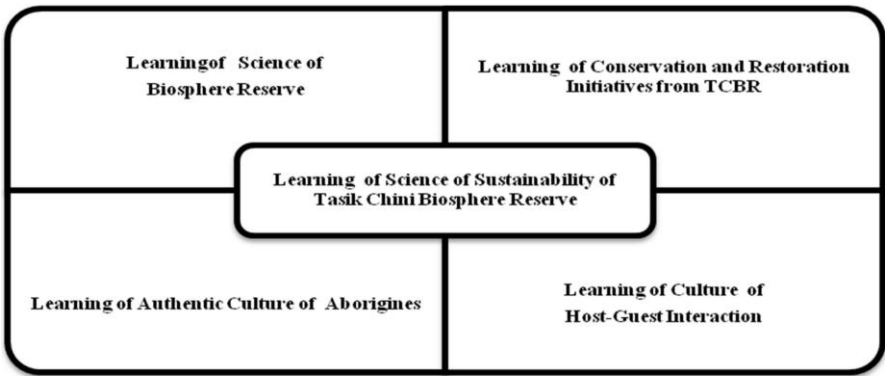

Figure 2. The Learning of Science of Sustainability of Tasik Chini Biosphere Reserve.

activities, four major themes seem to uphold the content and context of the site, namely 1) learning about and for biodiversity; 2) conservation and rehabilitation; 3) cultural, social and livelihood; and 4) local hospitality. These themes were then matched with the duration of the visit, visitors' segmentation and their knowledge background.

The learning of culture of sustainability introduces the ecosystem of the Biosphere Reserve. This is because through the understanding of the ecosystem, the students would be capable of appreciating the livelihood in the area. This is particularly important as the learning provides the characteristics of the physical, biological and cultural setting. Secondly, as the site offers a different entity of an ecosystem, learning about the culture will showcase how each site approach issues of sustainability, including conservation and restoration. Thirdly, learning about the culture means a closer context with the livelyhood of the community. At this stage, real examples are demonstrated to capture students' understanding, acceptance and critical mind, and most importantly, enthuseasm in the proposed programmes on conservation and sustainable Biosphere Reserve.

The final perspective deals with the hospitality of the host as well as the respect for the host-guest relationship.

This setting is aimed at fostering the learning culture of global students, comprising of the interaction between scholars-students and between students; internationals and the locals.

The students, being active participants, can experience student-centered learning and deep learning compared to the teacher-centered learning and surface learning. Between students, this environment has provided not only generic skills, but life-long learning, specifically on interactions between the locals and international societies. It is anticipated that learning about sustainability of Tropical Heritage could be achieved with the four dimensions mentioned above, especially in learning specific-site knowledge of the Biosphere Reserve (BR). **Table 3** shows the details of the activities.

4.2. Learning about the Ecosystem Health of Tasik Chini

Tasik Chini's learning community comprised of various segments of visitors, ranging from young school children of the locality and from the neighbouring areas to a more educated youth segment of urban areas. Taking into consideration that the young locals and the neighbouring school children are the "guardian of the BR", a simpler way of understanding this ecosystem was initiated. As such, activities were organised in such a way that learning about the ecosystem's health is simpler even though it was aimed at explaining the complexity of the food chain, especially on the flora and fauna found in the area. Students were engaged in conservation through activities such as planting a tree a day and art therapy. For this pro-

gramme, the Kolb cycle of learning and five sensory medium of learning were utilized into hands-on activities Apparently, collages presented in scrapbooks prepared by the children, showed the high concern for TCBR's future among the young generation.

On the other hand, the scientific learning and ecotourism experience of the youth visitors were of a moderate level of complexity. Taking into consideration that they have been taught subjects such as biology, chemistry and physics at the matriculation level, programmes offered were more specialised. The programmes comprised both theoretical and practical modules, especially on the ecosystem of the lake, land ecology and diversity of local species. Practices of lake water sampling techniques, small mammal trapping and flora mapping were aligned with their matriculation learning and teaching needs.

4.3. Learning about the Culture of Tasik Chini

Envisioned as an ecotourism as well as a learning destination, Tasik Chini will definitely develop its own au-

Activities of TCBR	Science	Local culture
Activity 1: Fishnets set-up	Cultural anthropology and fish	Gazing at the morning activities of the lake community.
Activity 2: Visit to hatchery site and acclimatization cage	Aquatic and Rehabilitation	Fish feedings and naming of fishes.
Activity 3: Water quality and hydrology	Hydrology and Geography	Boating and lake excursion
Activity 4: Macrophytes sightseeing and fish harvesting	Biology and Aquatic ecosystem	Walking under the canopy and Tropical Trails
Activity 5: Traditional Kayaking	Hydrology, Ecology	Kayaking as traditional skill, and group spirit during competition.
Activity 6: Socio-cultural activities and Kelundang dance	Cultural tourism and host's hospitality	Enjoying the local culture and interaction between participants.
Activity 7: Lotus planting and reforestation	Conservation, lotus and ecosystem	Lotus as the cultural heritage of the locals.
Activity 8: Blowpipe	Anthropological approach of aborigines	Blowpipe contest and traditional skills.

Table 3. Activities during The Mobility Programme and The Orientation.

thentic learning experiences. In this vein, the learning processes will be iterative, tailor-made and involve the community of the BR. In the TCBR, the practice of learning with the locals varies according to the audience or visitors' needs or requests. **Figure 3** shows some scenes from the learning programmes on the local culture of Tasik Chini.

4.3.1. The Kelundang Dance

The Kelundang Dance is one of the cultural traditions inherited from the ancestors. Often staged and performed during special ceremonies among the Jakun tribe, the cultural dance fits well with members of the community. Over the years, however, this tradition has been diminishing from the community's cultural landscape and livelihood.

Their performances only seem to be staged when requested by the tourism providers. Realising that this tradition needs to be conserved and inherited, the TCRC took several initiatives in ensuring that the Kelundang Dance becomes the native tradition, including 1) stating it as one of their tradition in the dossier of Tasik Chini; in which many of their events seem to showcase this dance, and 2) forming a cultural group of young school children to ensure sustainability, with special songs/lyric to be enjoyed by the guests.

4.3.2 Weaving the Jari Lipan

The Jakun, living closely with nature, possesses untapped skills in handicrafts. Even though handicraft making is considered domestic work among females, it is through the public consultation and awareness initiated by the PPTC's events that they were informed of opportunities to produce and commercialize local crafts. Besides making them involved directly in the exhibition, the women were consulted on creative production. These opportunities ensure sustainability of small businesses within the limitation of their capabilities and know how.

Feedbacks collected during thematic events held, showed that both locals and international visitors enjoyed learning the Jari Lipan. Even though they were taught by the locals who lack communication skills, especially in English, learning opportunities were noticeably appreciated.

4.3.3. The Traditional Water Kayaking

Being in the vicinity of the lake, the community is highly dependent on the lake and its ecosystem. The lake and rivers provide the cheapest mode of transportation and roaming areas, giving them the opportunity to develop their "sampan" or "kayaking" skills. These skills however, seem to have faded from the lake-scape of Tasik Chini. Taking into account the importance of conserving the local culture, this experience was re-created in the learning programmes.

4.3.4. Challenge for Survival in the Forest Trail

As the Jakun tribe usually roams the neighbouring forests for food supply, exploring what these forest trails have on offer is therefore an exciting experience. According to the village folks, the forest trails have existed for more than three decades, mostly for the use of backpackers who stayed overnight or longer. During these trails, the tourists were taught the survival skills of the natives in the forest, including cooking with bamboos, making utensils from leaves and getting water naturally from stems and roots. Of recent development, two scientific knowledge trails have been developed, namely the Tempenis and the Kempas trails. With ongoing work on the flora and fauna research in Tasik Chini, these forest trails lead to a conservation of rare, threatened and endemic species.

4.4. Responses from the Learning Community

As revealed in the literature, a learning site has its own learning community; therefore, it is vital to establish who the learning communities are. To put it simply, segmentation of existing and potential learning community needs

Figure 3. The Cultural Learning at Tasik Chini.

an in-depth study of their characteristics and behaviour. **Table 4** shows the major segments of the learning community.

Besides recognising the learning community's characteristics, questionnaires were distributed to the participants to provide feedbacks and programme assessment. The results show that appreciation of deep learning in conservation initiatives and eco-hydrological experiments as well as cultural experience of the aboriginals achieved high mean values. **Table 5** shows satisfaction of the content, staff and site scored high mean values; on the other hand, accommodation, food and cleanliness only achieved satisfactory mean values.

The results of the international students' survey indicate contradictory perspectives between the local guests - the primary school surrounding and within the BR and the matriculation students and participants of the international mobility programmes. Their comments clearly showed that the real community of the BR has yet to be established. Their expectations

on various facilities demonstrated that their assessment were made in comparison to the "re-sort" facilities, while at this juncture, these have

Potential Market Identified	Market Characteristics
Students, undergraduates and graduates	- Involve both local and international students who seek adventure and knowledge-added value in tour. - Work as part-time professional tour guides once completing the tour guide training module. - Apply knowledge gained in the classroom into real-life activity. - Share knowledge with tourists and local community.
Mobility programme, inbound international students	- Involve both local and international groups. - International groups act as the ambassadors of their home country by sharing their knowledge and culture with the local community. - Promote Malaysia as a tourism destination through their report writings. - Appreciate local culture and heritage through participation with the locals.
Researchers	- Local and international researchers. - Contribute to conservation through research, teaching and learning. - Assist development of the local economy through guidance, support and knowledge transfer.
Expatriates and high culture tourists	- Involve both local and international high-end k-eco-tourists. - Generally educated and demand learning process while vacationing. - Willing to spend extra money in exchange for knowledge and experience with the local heritage. - Aware of travelling impact on the environment and conscious of conservation efforts. - Choose professional tour guide services and legitimate tour agencies.

Table 4. Segments of the Learning Community.

Please rate for Hospitality of Thematic Program	Mobility program year 2010 N 37	Mobility program year 2011 N - 18	Mobility program year 2012 N 16	Kembara Pelajar Tasik Chini N 76	Matriculation students N-54
Year	2010	2011	2012	2010	2012
			Mean		
Services	4.03	3.61	3.75	4.60	4.46
Accommodation	3.59	2.99	2.13	Not rated, day trip only	4.57
Transportation	4.32	3.61	3.56	4.50	4.58
Food and refreshments	4.03	3.72	3.38	4.56	4.31
Activities	3.92	4.28	3.50	4.67	4.35
Social interaction	3.95	3.89	3.94	4.51	4.51
Facilitators and staffs/experts	4.32	4.22	3.94	4.60	4.31
Cleanliness and safety	3.41	3.17	2.81	4.51	4.31
Information, content and approach of the programme	4.16	3.67	3.51	4.67	4.80
Site	4.00	4.00	3.40	4.58	4.07

Table 5. Hospitality Rating of Thematic Programmes of TCBR.

yet to be provided. However, their assessment on the community who hosted the cultural experiences demonstrated that they preferably favour the learning process at the Orang Asli settlement as it offered authentic and real life experience of the Orang Asli's culture. The children on the other hand, were energized with the learning of science in the area of their vicinity and had a better understanding of the Orang Asli livelihood, their closest neighbours within the BR locality. Below are some of the excerpts from their feedback:

Sustainable tourism-friendliness and indigenous interact with people in the city. The Fish Farm-preserves biodiversity, use of algae of research & monitoring forest.

(N 3 Hong Kong Mobility Student, 2012).

I had an excellent experience of visiting the indigenous people. I learn about their lifestyle and compare to it with Hong Kong lifestyle. What I realised - it seems that we are pursuing too much, much more than we need compared with what the aboriginals had

(N14 Hong Kong Mobility student, 2012).

I learn to be friendlier to nature and environment. Indeed I acquire new knowledge in my own area. Again, I wish to get more exposure on Biosphere reserve

(Children of Kembara Tasik Chini, 2010).

I love learning food web, culture and opportunities in this program make me understand more about Orang Asli - they are my closest neighbour indeed

(Children of Kembara Tasik Chini 2010).

Based on the above mentioned approaches, this study reveals that setting of a learning destination requires a holistic idea of the BR's key roles. Even though Tasik Chini's achievement is still at its infancy stage, several challenges need to be minimized and resolved. These include: 1) The holistic understanding of the sciences of the Biosphere Reserve as it combines multi-disciplinary approach and orientation. Pedagogical strategies in learning and teaching Biosphere reserve should be strengthened to ensure variation of knowledge and interests of learners and visitors; 2) The authenticity and creativity of the local players are required to fulfil the knowledge needs of the eco-tourists and visitors. Differences in tourists' origin may increase cultural barriers and practices; 3) While the TCBR is a rehabilitation programme, lack of facilities may cause misunderstanding and unsatisfactory experiences; 4) Collaboration between the locals and scientific community remains minimal due to limited funding. While the thrust of the locals towards collaboration is assured, ensuring participations of the locals requires a win-win negotiation and sharing of benefits in the value chain of economy and livelihood. Furthermore, as the locals possess low educational attainment, language barriers and ecotourism ethics are some of the constraints in providing quality services, highlighting the urgency of capacity building and empowerment of human capitals.

5. Conclusions

This study provides an understanding of how a Biosphere Reserve functions as a learning destination with three major principles. First, the creation and staging of experience and activities are based on site-specific knowledge of TCBR that are not only concerned with conservation and restoration practices, but in helping to build and inculcate awareness of sustainable development of the lake and wetland ecosystem. The second is the integration of players from the local communities that is equally significant in providing real life experience, tradition and involvement of the community. Third, the existence of the learning community must be ensured as this drives the sustainability of the inbound market of LTD.

The site specific knowledge, however, should not only cover scientific orientation as most of the eco-tourists or Biosphere learners also seek opportunities to experience the cultural flavour of the locals. Staging of the local cultural tradition in the villages is more appreciated as their surroundings are real and authentic. Additionally, taking ecotourism into conservation and rehabilitation programme is also appreciated but should not be overemphasized because of the short duration of visits and leisure time to freely experience the natural surroundings. Longer duration will be recommended only when these learners need to engage in scientific experiments.

Overall, even though this initiative is still at its very infancy, undertakings the knowledge eco-tourists experiences could be the platform to segment the learners to ensure better function of the Learning Destination. It is recommended that the principles of the scientific and local knowledge become the thrust of LTD of Tasik Chini.

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REFERENCES

1. UNESCO, "The Man and the Biosphere (MAB) Programme," 2012. http://www.unesco.org/new/en/natural-sciences/environment/ecologicalsciences/man-andbiosphere-programme/
2. UNESCO, "UNESCO Biosphere Reserves: Learning Laboratories for Sustainable Development," 2007. http://unesdoc.unesco.org/images/0015/001516/151607e.pdf
3. N. Ishwaran, "Science in Intergovernmental Environmental Relations: 40 Years of UNESCO's Man and the Biosphere (MAB) Programme and Its Future," Environmental Development, Vol. 1, No. 1, 2012, pp. 91-101.http://dx.doi.org/10.1016/j.envdev.2011.11.001
4. N. Ishwaran, A. Persic and N. H. Tri, "Concept and Practice: The Case of UNESCO Biosphere Reserves," International Journal of Environment and Sustainable Development, Vol. 7, No. 2, 2008, pp. 118-131. http://dx.doi.org/10.1504/IJESD.2008.018358
5. D. Kušová, J. Těšitel, K. Matějka and M. Bartoš, "Biosphere Reserves—An Attempt to Form Sustainable Landscapes: A Case Study of Three Biosphere Reserves in the Czech Republic," Landscape and Urban Planning, Vol. 84, No 1, 2008, pp. 38-51.
6. J. Kriesel, "Education for Sustainable Development in the Biosphere Reserves Schaalsee, Germany, and Kristianstads Vattenrike, Sweden," Diploma Thesis, University of Greifswald, 2011. http://www.mnf.unigreifswald.de/fileadmin/Geowissenschaften/geographie/angew_geo/Diplomarbeiten/Janin_Kriesel _Diplomar beit_ BNE.pdf
7. Y. Luo and J. Deng, "The New Environmental Paradigm and Nature-Based Tourism Motivation," Journal of Travel Research, Vol. 46, No. 4, 2008, pp. 392-402.http://dx.doi.org/10.1177/0047287507308331
8. M. Batisse, "Biosphere Reserves, a Challenge for Biodiversity Conservation and Regional Development," Environment, Vol. 39, No. 5, 1997, pp. 7-33.http://dx.doi.org/10.1080/00139159709603644
9. J. J. Kay, H. Regier, M. Boyle and G. R. Francis, "An Ecosystem Approach for Sustainability: Addressing the Challenge of Complexity," Futures, Vol. 31, No. 7, 1999, pp. 721-742.http://dx.doi.org/10.1016/S0016-3287(99)00029-4
10. C. Canning, "Conservation and Local Communities: Exploring the Upper Bay of Fundy Biosphere Reserve Initiative in Nova Scotia," 2005. http://www.bofep.org/PDFfiles/Caroline_Canning_Final_ 20Thesis.pdf
11. L. Kruse-Graumann, "Education for Sustainable Development in German Biosphere Reserves," 2007. http://www.unesco.de/fileadmin/medien/Dokumente/unesco-heute/uh2-07-p22-26.pdf
12. J. N. Pretty, I. Guijt, J. Thompson and I. Scoones, "Participatory Learning and Action: A Trainer's Guide," IIED, London, 1995.
13. M. F. Price, "The Periodic Review of Biosphere Reserves: A Mechanism to Foster Sites of Excellence for Conservation and Sustainable Development," Environmental Science & Policy, Vol. 5, No. 1, 2002, pp. 13-18. http://dx.doi.org/10.1016/S1462-9011(02)00021-7
14. D. McCarthy, G. Whitelaw, P. Jongerden and B. Craig, "Sustainability, Social Learning and the Long Point World Biosphere Reserve," Environments Journal, Vol. 34, No. 2, 2006, pp. 1 -15.
15. J. Tippett, B. Searle, C. Pahl-Wostl and Y. Rees, "Social Learning in Public Participation in River Basin Management-Early Findings from Harmony COP European Case Stud-

ies," Environmental Science and Policy, Vol. 8, No. 3, 2005, pp. 287-299.http://dx.doi.org/10.1016/j.envsci.2005.03.003

16. T. Van Mai and O. J. H. Bosch, "Systems Thinking Approach as a Unique Tool for Sustainable Tourism Development: A Case Study in the Cat Ba Biosphere Reserve of Vietnam," 2010. www.systemdynamics.org/conferences/2010/proceed/.../P1312.pdf

17. N. C. Nguyen, O. J. H Bosch and K. E. Maani, "The Importance of Systems Thinking and Practice for Creating Biosphere Reserves as Learning Laboratories for Sustainable Development," 2009. http://journals.isss.org/index.php/proceedings53rd/article/view/1161/398

18. K. Schianetz, L. Kavanagh and D. Lockington, "The Learning Tourism Destination: The Potential of a Learning Organisation Approach for Improving the Sustainability of Tourism Destinations," Tourism Management, Vol. 28, No. 6, 2007, pp. 1485-1496.http://dx.doi.org/10.1016/j.tourman.2007.01.012

19. K Schianetz, J. Tod, L. Kavanagh, P. A. Walker, D. Lockington and D. Wood, "The Practicalities of a Learning Tourism Destination: A Case Study of the Ningaloo Coast," International Journal of Tourism Research, Vol. 11, No. 6, 2009, pp. 567-581.http://dx.doi.org/10.1002/jtr.729

20. H. Gibson, "The Educational Tourist," Journal of Phvsical Education, Recreation and Dance, Vol. 69, No. 4, 1998, pp. 32-34. http://dx.doi.org/10.1080/07303084.1998.10605533

21. A. Holdnak and S. Holland, "Edutourism: Vacationing to Learn," Parks and Recreation, Vol. 31, No. 9, 1996, pp. 72-75.

22. Ministry of British Colombia, "The Environmental Learning and Experience. Curriculum Map Environment and Sustainability across Bc's K-12 Curric," 2009. http://www.bced.gov.bc.ca/environment_ed/ele_maps.pdf

23. S. De la Barre, "Learning Travel Product Development Workbook: A Step-By-Step Guide for Yukon and Northern Entrepreneurs, North to Knowledge (N2K), Whitehorse, Yukon," 2005. http://www.tc.gov.yk.ca/pdf/LearningTravelProductDevelopmentWorkbook.pdf

24. M. Flitner, U. Matthes, G. Oesten and A. Roeder, "The Ecosystem Approach in Forest Biosphere Reserves: Results from Three Case Studies," Albert-Ludwigs-Universität Freiburg, Freiburg, 2006. http://www.bfn.de/fileadmin/MDB/documents/skript168.pdf

25. H. L. Ballard, M. E. Fernandez-Gimenez and V. E. Sturtevant, "Integration of Local Ecological Knowledge and Conventional Science: A Study of Seven CommunityBased Forestry Organizations in The USA," Ecology and Society, Vol. 13, No. 2, 2008, p. 37.http://www.ecologyandsociety.org/vol13/iss2/art37/

26. G. E. Yates, T. V. Stein and M. S. Wyman, "Factors for Collaboration in Florida's Tourism Resources: Shifting Gears from Participatory Planning to Community-Based Management," Landscape and Urban Planning, Vol. 97, 2010, pp. 213-220.

27. C. Lashley and P. Barron, "The Learning Style Preferences of Hospitality and Tourism Students: Observations from an International and Cross-Cultural Study," International Journal of Hospitality Management, Vol. 25, No. 4, 2006, pp. 552-569. http://dx.doi.org/10.1016/j.ijhm.2005.03.006

28. J. Purkayastha, S. C. Nath and M. Islam, "Ethnobotany of Medicinal Plants from Dibru-Saikhowa Biosphere Reserve of Northeast India," Fitoterapia, Vol. 76, No. 1, 2005, pp. 121-127. http://dx.doi.org/10.1016/j.fitote.2004.10.012

29. K. S. Rao, R. K. Maikhuri, S. Nautiyal and K. G. Saxena, "Crop Damage and Livestock Depredation by Wildlife: A Case Study from Nanda Devi Biosphere Reserve, India," Journal of Environmental Management, Vol. 66, No. 1, 2002, pp. 317-327.

30. S. K., Singh, J. P. N. Rai and A. Singh, "Influence of Prevailing Disturbances on Soil Biology And Biochemistry of Montane Habitats at Nanda Devi Biosphere Reserve (NDBR), India During Wet and Dry Seasons," Geoderma, Vol. 162, No. 3-4, 2011, pp. 296-302.http://dx.doi.org/10.1016/j.geoderma.2011.02.014

31. D. Manuel-Navarrete, S. Slocombe and B. Mitchell, "Science for Place-Based Socio-ecological Management: Lessons from the Maya Forest (Chiapas and Petén)," Ecology and Society, Vol. 11, No. 1, 2006, p. 8. http://www.ecologyandsociety.org/ vol 11/ iss1/ art8/

32. G. Francis and G. Whitelaw, "Biosphere Reserves in Canada: Exploring Ideals and Experience," Environment, Vol. 32, No. 3, 2004, pp. 61-78.

33. V. Christidou, "Interest, Attitudes and Images Related to Science: Combining Students' Voices with the Voices of School Science, Teachers, and Popular Science," International Journal of Environmental & Science Education, Vol. 6, No. 2, 2011, pp. 141-159.

34. A. Watson, L. Alessa and B. Glaspell, "The Relationship between Traditional Ecological Knowledge, Evolving Cultures, and Wilderness Protection in the Circumpolar North," Conservation Ecology, Vol. 8, No. 1, 2003, p. 2. http://www. consecol.org/ vol8/iss1/ art2

35. G. Boucher, C. Conway and E. V. Der Meer, "Tiers of Engagement by Universities in their Region's Development," Regional Studies, Vol. 37, No. 9, 2003, pp. 887-889.http://dx.doi.org/10.1080/0034340032000143896

36. D. Buss, "Secret Destinations. Creativity or Conformity? Building Cultures of Creativity in Higher Education," A Conference Organised by the University of Wales Institute, Cardiff in Collaboration with the Higher Education Academy, Cardiff, 8-10 January 2007. http:www.creativityconference07.org/presented_papers/Buss_Secret.doc

37. O. Zbyranyk, "Collaboration between Researchers and Biosphere Reserve Practitioners: A Case Study of Redberry Lake Biosphere Reserve, Canada," Thesis, University of Saskatchewan Saskatoon, 2012. http://ecommons.usask.ca/bitstream/handle/10388/ETD-2012-09-654/ZBYRANYK-THESIS.pdf?sequence=4

38. L. Schultz and C. Lundholm, "Learning for Resilience? Exploring Learning Opportunities in Biosphere Reserves," Environmental Education Research, Vol. 16, No. 5, 2010, pp. 645-663. http://dx.doi.org/10.1080/13504622.2010.505442

39. P. K. Ankomah and R. T. Larson, "Education Tourism: A Strategy to Strategy to Sustainable Tourism Development in Sub-Saharan Africa," 2000. http://www.unpan1.un.org/intradoc/groups/public/documents/.../UNPAN002585

40. J. Coria and E. Calfucura, "Ecotourism and the Development of Indigenous Communities: The Good, the Bad, and the Ugly," Ecological Economics, Vol. 73, 2012, pp. 47-55.

41. M. Galliford, "Touring 'Country', Sharing 'Home': Aboriginal Tourism, Australian Tourists and The Possibilities for Cultural Transversality," Tourist Studies, Vol. 10, No. 3, 2010, pp. 227-244. http://dx.doi.org/10.1177/1468797611407759

42. A. Habibah, J. Hamzah, I. Mushrifah, A. Buang, M. E. Toriman and K. Jusoff, "The Success Factors of Public Consultation in the Establishment of a Biosphere Reserve -Evidence from Tasik Chini," World Applied Science Journal, Vol. 13, 2011, pp. 74-81.

43. A. Habibah, I. Mushrifah, J. Hamzah, M. E. Toriman, A. Buang, K. Jusoff, M. J. Mohd Fuad, A. C. Er and A. M. Azima, "Assessing Natural Capital for Sustainable Ecotourism in Tasik Chini Biosphere Reserve," Advances in Natural and Applied Sciences, Vol. 6, No. 1, 2012, pp. 1-9.

44. A. Habibah, R. Mohamed, I. Mushrifah, J. Hamzah, M. N. Aimi Syairah and A. Buang, "Positioning University as Knowledge Ecotourism Destination: Key Success Factors," International Business Management, Vol. 6, No. 1, 2012, pp. 32-40.http://dx.doi.org/10.3923/ibm.2012.32.40

WILDLIFE RESOURCES OF ETHIOPIA: OPPORTUNITIES, CHALLENGES AND FUTURE DIRECTIONS: FROM ECOTOURISM PERSPECTIVE: A REVIEW PAPER

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ABSTRACT

The economy of Ethiopia has prospered for many years on agricultural products but currently, the country expands to industrialization and service providing for additional incomes. However, the wildlife tourism and conservation practices are still at low attention. Therefore, this review paper identifies potential opportunities and wildlife diversity to promote wildlife tourism practices in Ethiopia. Furthermore, it also identifies the challenges and future directions to put into practice for future wildlife tourism industry. Wildlife tourism is one of the best potential economies to the country due to the presence of magnificent diversity of wildlife with high endemism and expansion of protected areas. The main intentions of tourists are to visit large mammals and birds with their natural habitats. The country earns million dollars per year only from protected areas through nature based tourism. The Montane and Afroalpine, Rift Valley and Transboundary ecosystem, a world class icon for wildlife tourism which attracts various tourists, and potential tourism destination for Ethiopia due to its high mammalian diversity and scenic area. The expansion of protected areas, peaceful and friendly people, and endemism promote tourism industry in Ethiopia. Even though, Ethiopia is the third country next to Tanzania and Uganda in terms of land surface of protected area; human-wildlife conflict, loss of biodiversity, and limited tourism and conservation attention with poor infrastructure are some of the major challenges. To scale up wildlife tourism industry, better promotion with practical conservation practices, community based tourism approaches and infrastructures should be implemented throughout the whole area of tourist destination.

Keywords:

Challenges, Ethiopia, Protected Areas, Tourism, Wildlife

1. Introduction

The interaction between human being and nature was started before million years ago when human being was created. Their relationships have been increased and more intense during the hunt and gathering. Traditionally, many people perceived wildlife as only to some game species (almost exclusively birds, mammals, and fish) that has been hunted. Currently, the term “Wildlife” includes all living organisms that are not domesticated and found in the wild, even those that are not used for sport hunting (non-game species) [1] . In the recent past, before the expansion of wildlife promotion and education, some people also defined “wildlife” is only large mammals; such as elephants, lions, cheetah, hyena, leopard, buffalo and other related species. However, therefore, wildlife refers to the variety of all living organisms inhabiting in the wild, at the genetic, species and ecosystem levels on earth.

Tourism is an important strategy for socio-economic development in developing countries [2] . Wildlife is an important economic asset to many sub-Saharan Africa. Tourist hunting (or trophy or recreational hunting) is an important sub-sector of the overall tourism market, and

one that is even more directly tied to particular species of large mammals [3] . Wildlife tourism is becoming the most common leisure, which increased major concerns because of its impression towards wild species and their habitats [1] . This popular industry, wildlife tourism, influences directly or indirectly the country's income through the involvement of wildlife-dependent or wildlife- dependent recreation. Wildlife-independent recreation includes sighting or hearing the wild species within their natural habitats. On the other scenario, wildlife-dependent leisure is more disruptive though outside activities are usually intentional since visitor's satisfaction relies on the presence of wild species. It can be also extended activities ranges from leisure tracking of wildlife, to photographing and videotaping, and to sport or trophy hunting, mountaineering, game viewing to bird-watching (avitourism) in their habitats [1] [4] .

Wildlife tourism can be recognized in many African countries, including Ethiopia: Safari tourism, ecotourism and recreational tourism. The Safari tourism is the most common excursion of national parks; it includes to a large public that is interested in viewing large mammals and colorful birds in a wild with exotic landscape and a range of nature tourism products. Many of these wildlife visitors will also be interested for integrated cultural and natural heritages [3] [5] . The ecotourism includes journeys for bird viewing, sport fishermen, speleologists (those who enjoy exploring caves and their wildlife), botanists and other ecologists, who interested on wildlife perspectives. Recreational tourism is residents and citizens who pursue the joys of the countryside at special occasions. However, this paper includes all these three tourism aspects.

Wildlife tourism is one of the key economic activities for countries that have rich biodiversity and high endemism. Nature based tourism includes a wide range of activities, such as bird-watching, whale-watching, general wildlife viewing, visiting zoos and aquaria, snorkeling to view underwater life, hunting and recreational fishing [1] . Wildlife tourism can also be categorized as either consumptive or non-consumptive, which based on the recreational intentions of tourists and the level of visitor-wildlife interactions.

In the previous decades, before the existence of mass tourism, visitors were content with viewing displayed animals in zoological gardens. These days, many tourists desire to get and interact with wild species in their habitats and experience a much more close to realistic habitats [1] [6] . The main attention of many tourists that visit Africa is to visit large mammals in great variety, large numbers and at close proximity [3] [7] . For example, large numbers of tourists, both local and foreign, watch sea turtles and whales in Australia like in some other parts of the world [8] . Proximity to animals particularly endemic large animals are an enormously best mechanism whereby tourists can excite by them with nature. The chance of human being connected with nature arguably difficult due to increment of urbanization and many people travel to "reconnect" with things natural to appreciate nature [7] -[9] .

The main objective of this paper is to provide a review of the wildlife resources and historical development of wildlife tourism in Ethiopia, with particular reference to the opportunities and challenges that the industry faces in order to provide future direction for sustainable tourism development to the country.

Historical Tourism Development in Ethiopia

Many developing countries incorporated tourism as one of the main components of their economic development and foreign exchange earners. Gross income is more than 20% of the total value of merchandise exports are the most important export of goods and services. Ethiopia has a long history of conservation. The first recorded indigenous conservation-oriented activity took place during the reign of Emperor Zerea Yacob (1434-1468) [10] . It expanded after the victory of Italia at the battle of Adwa from the north corner of the country. Later, in

the early 19th century the wildlife conservation was only for large and flagship animals. For example, Emperor Menelik II on 1908 amended the first regulation, against young elephant hunting by peoples. Then, in 1960's based on the United Nations Scientific, Educational and Cultural Organization (UNESCO) suggestion to the country, Ethiopian Wildlife Conservation Organization (EWCO) was established in 1964 under Ministry of Agriculture. During this time two protected areas namely; Awash National Park and Simien Mountains National Park were established (Figure 2). The former EWCO changed its name to Ethiopian Wildlife Conservation Authority (EWCA) and formally re-established since 2008 under Ministry of Culture and Tourism aimed to manage and conserve the protected areas of the country.

The country's geology, archeological sites and landscape as well as cultural diversity have been contributed for tourism development and promotion. However, the wildlife tourism solely dependent on protected areas, primarily national parks and sanctuaries of the country. During the 1970s, trophy hunting was also conducted on a large scale in Ethiopia, though since then, increasing human populations, political instability and encroachment on wildlife habitat have resulted in a 95% decrease in the area used for trophy hunting. The Mountain Nyala (Tragelaphus buxtoni) the species most commonly used by operators to attract visiting hunters to Ethiopia. Later, the government knew the importance of wildlife resources (primarily for large animals and scenic places) for tourism development due to revenue and supports the countries income. Therefore, the government has attached due attention to formulate a wildlife development and protection strategy in harmony with the country's goal, and the existing international natural resources development and protection principles [11] . Besides, the intention is to halt the decline of wild animal populations and enable the country to realize the maximum benefit from the sub-sector (in the form of tourism, live animals and products trade and hunting).

2. Potential Opportunities

2.1. The Presence of Diversified Wildlife

Ethiopia is located at 3˚30'N and 15˚00'N latitude and 33˚E and 48˚E longitudes in the horn of Africa, and one of the wildlife biodiversity centers of the world [12] -[14] . Ethiopia is one of the top 25 biodiversity-rich countries in the world, and hosts two of the world's 34 biodiversity hotspots, namely: the Eastern Afromontane and the Horn of Africa hotspots [11] [15] .

The biogeographic of the country characterized by two features; namely the arid horn of Africa (Ogaden) and mosaic highland plateau [10] and results extremely rich and distinctive flora and fauna. This wildlife diversity is a great attraction of tourists; nature based tourism to support the country's economy and for future protected area management to the country [16] [17] . The country has a diverse and contrasting from the desert of the Dankil Depression, the lowest dry land points on earth at 116 m below sea level to Ras Dashen Mountain (the second peak and roof of Africa) at 4543 m above sea level [16] -[18] . The country has more than 1.3 million hectares (of which 1.12 million are land) with variety of climate, topography and vegetation supports high endemic flora and fauna of the country that attracts regional and global tourists [10] [18] (Table 1).

2.1.1. Faunal Diversity

Unlike the flora of Ethiopia, the fauna is not well investigated and documented. However, I tried to compile documents obtained from different literature to show the mammalian diversity that could contribute for tourism information and conservation development strategies (see Table 1).

Currently, around 320 species of mammal including 39 endemics (both small and large mammals), 918 birds with 19 endemic species, 240 reptiles (16 endemics), 71 amphibians (30

endemics) and 172 freshwater fishes with 38 endemics and more than 1225 insects recorded in Ethiopia (Table 1) [4] . Therefore, Ethiopia has one of the most diverse mammalian faunas in Africa and the great attractions of its wildlife heritage. Traditionally, many people simply represented Ethiopia as "Home of the Unique Seven" which refers to seven distinctive and large endemic mammals found only in Ethiopia. Those seven large mammals are; the Ethiopian wolf (Canis simensis), Mountainnyala (Tragelaphus buxtoni), Walia ibex (Capra walle), Menelik's bush buck, Swayne's hartebeest (Alcelaphus buselaphus swaynei), Gelada baboon (Theropithecus gelada) and Bale monkey (Chlorocebus djamdjamensis) and the rest (83.9%) are smaller ones including 2, 9 and 15 species of bats, insectivores and rodents, respectively. However, the country has more than seven large mammals [19] -[23] . For example, Boutourlini's blue monkey (Cercopithecus mitis boutourlini) which is an endemic sub species of blue monkey [24]

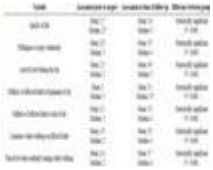

Table 1. Wildlife (fauna/flora) resources of Ethiopia.
Source: [10] [17] .

[25] , Ethiopian Lion (Panthera leo abyssincum) [26] , Starck's Hare (Lepus starcki) and Giant mole rat (Tachyoryctes macrocephalus) were some of endemic mammals of Ethiopia that are not included under unique endemic species. The large mammals are mainly concentrated in the south and southwest border and adjacent area of the country. Furthermore, the Great Rift Valley and mountain massifs are also homes for many endemic mammals.

2.1.2. Floral Diversity

The floral part of Ethiopia varies from montane forests with coniferous and broadleaved forests, vast savannah, steppes and to deserts are interrupted by lakes with acacia commiphora woodland ecosystem, crossed by rivers and streams accompanied by galley forests [27] . The flora and topography also provides another excitement for tourists. However, I concentrated mainly on large mammals, due to tourist's intention with their habitats, and scenic places across three eco-regions on the protected area. Ethiopia has diverse floral diversity, more than 6500 species of vascular plants (with 625 endemic species and 669 near-endemic species, and one endemic plant genus) and ranked the fifth largest floral country in tropical Africa [10] . I excluded the non-vascular plants of Ethiopia due to limited studies and documentation.

2.2. Expansion of Protected Area; Potential for Tourist Destination

Protected areas are the main focus for the maintenance of biological diversity and contribute for economic developments of a nation. In the past few decades, the numbers of protected areas in developing countries are expanding [26] . The forest cover of Ethiopia declined from 47% to only 3% for the past few decades due to ever increasing population and anthropogenic effect [4] . Ethiopia had 40 protected areas covers about 16.4% of the country's land area [18] [28] , and currently have more than 17.1% of its land, ranked third in African country next to Tanzania and Uganda Ethiopia (Figure 1). This crisis seems under recovering slowly in the future. The country is one of few countries where the establishments of protected areas are increasing. For example, Ethiopia had only two protected areas (namely; Awash and Simien Mountains National Park) before 40 years and today has more than 55 protected areas (including 21 national parks) [19] (Figure 2) to protect and conserve the natural ecosystems and wildlife heritage of the country [10] [29] (Table 2). Conversely, those protected areas are

exposed to severe pressure, which threatens their existence and sustainability due to anthropogenic effects [19] [30] -[32] . The geographical distribution of protected areas of Ethiopia presented on (Figure 2).

2.3. Wildlife Resources across Eco-Regions

The incredible biogeography of Ethiopia is characterized by four distinct regions, namely; the Highlands, Rift Valley, Western Lowlands, and the Eastern Arid Areas of the country [16] (Figure 3). Even though, enormous and diverse potentials for wildlife tourism development in Ethiopia, the tourism is spatially limited to few national parks and sanctuaries. Based on the information obtained from tourist guiders and expertise, the paper focused on three major eco-regions for wildlife tourism attractions; 1) The unique Montane and Afroalpine ecosystem; 2) the Great Rift Valley; and 3) the Transboundary Migratory Ecosystem in the neighborhood of Gambella (Table 3).

2.3.1. Montane and Afroalpine Protected Areas

The extensive highlands of Ethiopia are unique in Africa and home to high proportions of endemics. The Ethio-

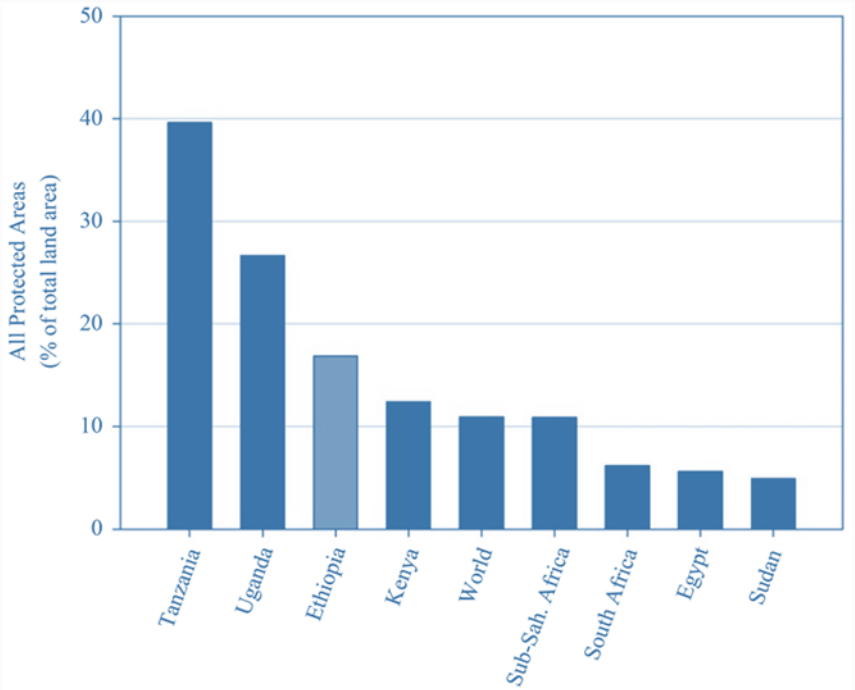

Figure 1. Comparison of land surface within protected areas of Ethiopia with other country.

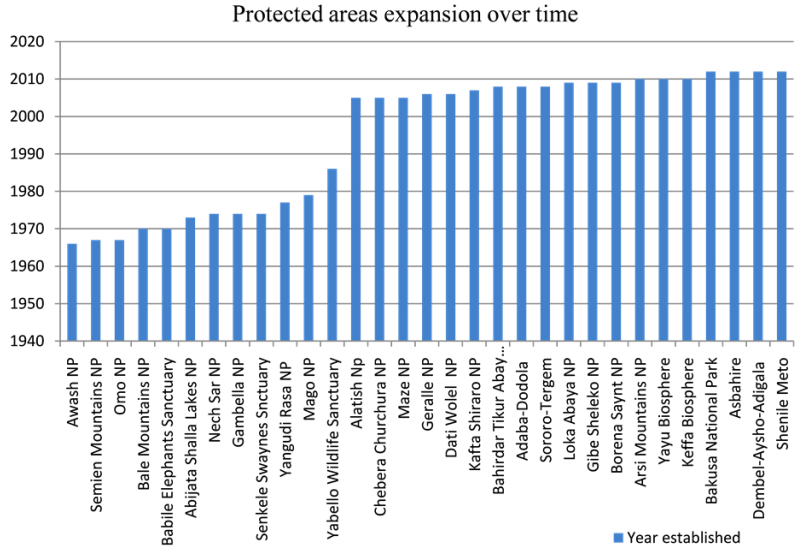

Figure 2. Protected area development of Ethiopia.

pian highlands consists of Afroalpine ecosystem and mountainous vegetation vary with coniferous and broadleaved forests and ericaceous vegetation types. The Afroalpine ecosystem contains protected areas including Bale Mountains National Park and Simien Mountains National Park and described below.

1) Bale Mountain National Park

a) Unique features

Bale Mountains National Park (the largest Afroalpine ecosystem in Africa) is encompassed within geographical coordinates of 6˚29'N - 7˚10'N and 39˚28'E - 39˚57'E. The park includes a major Afro alpine plateau over 3500 m above sea level as well the slopes to the south that include low land tropical moist forest down to 1500 m above sea level. The presence of largest Afroalpine habitat in Africa, steeper slope of the forest on Harenna escarpment, Mount Batu, Sanetti Plateau, Erica with giant plant lobelia and ecosystem of the park attracts numerous tourists. The park's habitat can be divided into five habitats: the Northern Grasslands (Gaysay Valley), Northern Woodlands (Park Headquarters), Afro-alpine Meadows (Sanetti Pleateau), Erica Moorlands, and the Harenna Forest. A large part of the park ranged from 3000 to 4377 m above sea level and this is the second highest peak of Ethiopia next to Ras Dashen of northern highlands. Tulluu Dimtu is the highest peak of the park delivers excellent view for tourists [17] .

b) Key species contributed for tourism

The mountains provide habitat and home of the endemic and endangered species (presented onFigure 4). It is home for five endemic mammals namely, Ethiopian wolf (Canissimensis) and Mountain nyala (Tragelaphus buxtoni), Menelik's bushbuck (Tragelaphus scriptus meneliki), Bale monkey (Chlorocebus djamdjamensis) as well as giant mole rat (Tachyoryctes macrocephalus). Therefore, itis among top visited park in Ethiopia due to its charismatic and endemic mammal species composition, and plays vital for tourism industry [17] . Besides these endemic mammals, the park is one of the most important birdareas in Africa

[33] . Moreover, the mountains offer great opportunities for mountain trekking, horse trekking, and scenic driving.

2) Simien Mountains National Park (SMNP)

a) Unique features

Simien Mountains National Park is located on geographical coordinates about 13˚9'N and 38˚15'E with an area of about 233 km^2 adjacent to Mt. Ras Dashen, the highest summit of the country and the fourth highest peak in Africa. It has been created due to mass erosion over the years of Ethiopian plateau which is spectacular landscapes in the world, with beautiful mountain peaks, deep valleys and sharp cliffs dropping some 1500 meter above sea level. The park is the most beautiful mountain area in the world and occupies chains of plateau and grassy plains [34] (Figure 5).

The park has a global impact for biodiversity conservation because of it is home to globally threatened and flagship species, including the iconic Walia ibex, a wild mountain goat found nowhere else in the world, the Gelada baboon and the Ethiopian wolf and therefore, those mammals contribute for tourism industry [16] -[18] . The presence of large number of endemic species, unique bio-physical features, and its international significance made Simien Mountains National Park to become one of the World Heritage Sites in 1978. Moreover, the area of wonderful topographical features on “the roof of Africa” with opportunities for viewing life of the local people, trekking, mountain hiking and ecological studies on the park has excellent potential for tourist attraction. The park is listed as one of the important bird areas in Ethiopia, more than 180 species of birds are recorded and some of them are endemic to the country [17] .

2.3.2. The Great Rift Valley Protected Areas of Ethiopia

The magnificent of the Great Rift Valley in Ethiopia consists of both aquatic ecosystems including lakes, rivers and giant waterfalls, and terrestrial with savannah crowded with game, dense and wonderful bush land area [8] . The Rift Valley ecosystem includes more than 15 protected areas from Yangudi-Ras National Park in the north to Omo National Park in the south which contains spectacular landscapes, lakes and forests with highly diverse communities of plants and animals, and many volcanic features. For this paper, I selected two national parks (Chebera Churchura National Park and Nech-Sar National Park) and one sanctuary (Senkelle Wildlife Sanctuary) due to their scenic features and the presence high mammal diversity [35] .

1) Chebera Churchura National Park (CCNP)

Chebera Churchura National Park is one of the recently established in 2007 protected areas and located about 330 and 460 km southwest of Hawassa and Addis Ababa, respectively [17] . It found within the western side of

(a)

(b)

(c) (d) (e) (f) (g) (h)

Figure 4. Partial view and large endemic mammals of the Bale Mountains National Park; (a) & (b) Landscape of the park, (c) Klipspringer, (d) Ethiopian wolf, (e) Giant mole rat, (f) Mountain nyala and warthog, (g) Menelik bushbuck, (h) Bale monkey (Photo by Alemneh Amare, 2014; EWCA (d)).

the central Omo Gibe basin of Rift Valley in the Southern Nation Nationalities Peoples and Regional State, Ethiopia. It lies between 36˚27'00"E - 36˚57'14"E and 6˚56'05"N - 7˚08'02"N and covers an area of 119 km^2 with altitudinal range of 700 - 2400 m above sea level [17] [36] .

The vegetation of the park can be divided in to four categories; montane forest, riverine forest, woodland and grassland vegetation types with high species composition. Its topographic feature is characterized by unique and very attractive with highly heterogeneous and hilly terrain, few flat lands and highly undulating to rolling plains with incised river and perennial streams, valley and gorges.

a) Fauna as a key species

The exceptional and variety of habitat hosts about 37 larger mammals and 237 species of birds in the park. Five large mammals “big five” species occur namely; African elephant (Loxodonta africana), African buffalo (Syncerus caffer), Lion (Panthera leo) and Hippopotamus (Hippopotamus amphibious) in the park. In addition to these key species, Gureza (Colobus guereza), Bush baby (Gelago senegalensis), Savanna baboon (Papio cy- nocephalus), Warthog (Phacochoerus africanus), Bushbuck (Tragelaphus scriptus), Bushpig (Potamocherus larvatus), Waterbuck (Kobus ellipsipprymus), Common duiker (Sylvicapra oreotragus), Golden jackal (Canis aureus), Honey badger (Mellovora capensis), African civet (Civettictis civetta), White tailed mongoose (Ichneumia albicauda), Spotted hyena (Crocuta crocuta), Leopard (Panthera paradus), Aardvark (Orycteropus afer),

(a) (b) (c) (d)

Figure 5. Partial view & large endemic mammals of Simien Mountains National park; (a) View ofthe park, (b) Walia ibex, (c) gelada baboon (male, female & neonate), (d) Ethiopian Wolf (Photo by Alemneh Amare, 2013).

Ground squirrel (Xerus erythropus), Porcupine (Hystrix cristata) and Nile crocodiles were some of the mammals recorded in the park [17] [36] [37] (Figure 6). Furthermore, out of varieties of bird species, White-cliff chat, Banded-barbet, Wattled ibis, Black-headed forest oriole and Thick billed raven are endemic species found in the area. Therefore, the presence of wilderness area with high mammalian diversity in chained mountain forest, tall-grassed savannah habitat, thick woodland forest, number of cold and hot springs and rivers, and historical caves are potential destination for tourists.

2) Nech-Sar National Park

Nech-Sar National Parkis among IUCN category II National Park in Ethiopia and established in 1974 to conserve the endemic Swayne's hartebeest and other key species as well as preserving its scenic beauty (Figure 7). It is situated at 510 km south of Addis Ababa near Arbaminch town. This Rift Valley protected area covers about 514 km^2 with elevation point ranged from 1108 to 1650 m above sea level. The park is surrounded by the Amaro Mountains in the east, north by Lake Abaya, and south by Lake Chamo and one of the best destinations of safari tourism in Ethiopia [17] . These two lakes support stocks of Nile perch and Cat fish.

The park's landscape includes extensive grasslands, savannah, mountains and hills and has a variety of habitats ranging from savannah, dry bush and ground water forests. Most of the park is covered in thick bush land with wooded valleys and foothills at the base of the Amaro Mountains. About 15% of the park consists of Lake Abaya and Chamo around that contributes groundwater forest and shoreline habitats, home for aquatic dependent animals [38] . Furthermore, the two major rivers, Sermule and Kulfo traverse the park and support variety amphibians.

a) Dominant flora of the park

The beautiful and diverse evergreen habitat which is dominated by large trees such as the Giant figs, Ficus sycomorus and Ficus vasta, forest mahogany, Trichilia dregana, and the Sermule Valley characterized by classic dry season habitat with large umbrella acacias (Acacia tortilis) and sycamore figs (Ficus sycomorus). Freshwater springs attract variety of butterflies and dragonflies some of them are endemic species.

(a) (b) (c) (d) (e) (f)

Figure 6. Few large mammals in Chebera Churchura National Park; (a) African elephant, (b) Lion, (c) Waterbuck, (d) Common jackal, (e) Warthog, (f) African buffalo (Photo from Ethiopian Wildlife Conservation Authority).

b) Fauna and key species

The aquatic and terrestrial ecosystem of Nech-Sar National Park harborsmore than 37 mammals and 330 bird species. Among these large mammals, Swayne's hartebeest (Alcelaphus buselaphus swaynei), Burchell's zebra (Equus burchelli), Grant's gazelle (Nanger granti), Waterbuck (Kobus ellipsipprymus), Warthog (Phacochoerus africanus), Bohor reedbuck (Redunca redunca), Oribi (Ourebiaourebi), Greater kudu (Tragelaphus strepsiceros), Common Bushbuck (Tragelaphus scriptus), Guenther's dik-dik (Madoqua guentheri), Grey Duicker (Sylvicapra grimmia), Bush duiker (Sylvicapra oreotragus), Bush pig (Potamocherus larvatus), and Hippopotamus (Hippopotamus amphibious). Lion (Panthera leo), Leopard (Panthera paradus), Serval cat (Leptailurus serval), Spotted hyena (Crocuta crocuta), Common jackal (Canis aureus) and Nile crocodile (Crocodylus niloticus) are the major predators recorded in the park (Figure 7). Four primate species, Anubis baboon (Papioanubis), Vervet monkeys (Chlorocebus pygerythrus) and Black and white colobus monkey (Colobus guereza), 19 bat species recorded in Nech-Sar National Park. The avifauna including kingfishers, storks,

pelicans, flamingos and fish eagles as well as for its migratory birds, and few birds including Wattled ibis, and Nech-Sar Nightjar are endemic species found in the park [17] .

c) Attractive features of the park

The presence of many large mammals and avifaunal diversity with two major lakes; Abaya and Chamo, Nech-Sar plain, Rift Valley escarpment, 40 hot springs nearby, white creamy grass covers the central plains, the "crocodile market" located on the northwestern shores of Lake Chamo attracts both local and international tourists.

3) Senkelle Wildlife Sanctuary

Senkelle Wildlife Sanctuary is one of the best tourist destination protected areas found in the Great Rift Valley of Ethiopia. It is located between 7˚10'N and 38˚15'E, and on the western side of the Great Rift Valley, west of Hawassa and 320 km south of Addis Ababa. The Sanctuary was established in 1976 to protect the endemic and endangered antelope species, Swayne's hartebeest (Alcelaphus buselaphus swaynei), and currently covers 54 km^2 [35] (Figure 8).

a) Faunas and habitat types

(a) (b) (c) (d) (e) (f) (g) (h)

(i) (j) (k) (l)

Figure 7. Few large animals found in Nech-Sar National Park; (a) Swayne's hartebeest, (b) Lion, (c) Warthog, (d) Crocodile and pelicans, (e) Serval cat, (f) Greater kudu and Zebra, (g) Guenther's dik-dik, (h) Anubis baboon, (i) Herd of Hippopotamus, (j) Grant's gazelle, (k) Common bushbuck and (l) partial landscape of the park (Photo by Alemneh Amare & EWCA, 2013/4).

The sanctuary characterized by montane savannah and acacia woodland habitat is quite scenic with Tesisa, Borena and Lalima hills and mountainous view. Swayne's hartebeest is one of the flagship species to the sanctuary and it harbors other wild animals including Bohor reedbuck (Redunca redunca), Lion (Panthera leo), Greater

(a) (b) (c)

Figure 8. Some of the key species in Senkelle Wildlife Sanctuary; (a) Swayne's hartebeest (Adult males & females), (b) Oribi (adult male & female).

kudu (Tragelaphus strepsiceros), Oribi (Ourebia ourebi), Spotted hyena (Crocuta crocuta), Servalcat (Leptailurus serval), Civet cat (Civettictis civetta), Caracal (Caracal caracal), Warthog (Phacocoerus aethiopicus), Grivet monkey (Chlorocebus aethiops), Crested porcupine (Hystrix cristata), Aardvark (Orycteropus afer), Abyssinian hare (Lepush abessinicus) and common jackal (Canis aureus) (Figure 8) as well as more than 91 species of bird [35] . The current population of Swayne's hartebeest is about 800 individuals (Warden's communication). Moreover, game driving; wildlife viewing, scenic views and wilderness camp with bird watching activities, acacia shade with musical songs of various bird species are the most exciting and opportunistic occasion to visitors.

2.3.3. The Southwestern Transboundary Ecosystem

1) Gambella National Park (GNP)

Gambella National Park founds on at the edge of southwestern lowlands of Ethiopia and established in 1974 to conserve a diverse assemblage of wildlife and unique habitats particularly key species (Figure 9). Prior to its established year, the park was created to protect extended swampy habitats on Akobo River with its wildlife. The park located on central coordi-

nates (34˚0.00'E and 7˚52.00'N) and 840 km west of Addis Ababa and covers a total area of 5061 km^2 with average altitude is about 550 m above sea level. Gambella National Park also supports extensive areas of wet grassland and swamps where the native grasses grow over 3 meters in height [6] .

a) Wildlife diversity of the park

Gambella National Park's vegetation covered by shrub lands, flood plains, woodland and forest with long savannah grasses. The park is very undistinguished from other protected areas of the country by transboundary habitats and hosts numerous migratory ungulates [16] . A large migratory population of White-eared kob migrates to and from Boma National Park in South Sudan, neighboring country of Ethiopia. Approximately, more than half million population of animals migrates and ranked the second migration in Africa next to the Serengeti wildebeest migration in Tanzania.

Gambella National Park has a variety of wildlife; more than 41 large mammals and 300 bird species of which 11 are Sudan-Guinea Biome species. The most common large mammals found in the mixed habitats are African elephant (Loxodonta africana), African buffalo (Syncerus caffer), Lion (Panthera leo), Warthog (Phacochoerus africanus), Bushbuck (Tragelaphus scriptus), Giraffe, Taing (Topi), Bush pig (Potamocherus larvatus), Spotted hyena (Crocuta crocuta), Waterbuck (Kobus ellipsipprymus), Nile lechwe, Burchell's zebra.The swampy and savanna-dwelling species hosts many mammals such as the Nile lechwe (Kobus megaceros), White-eared kob (Kobus kob leucotis), Roan antelope and Bohor reedbuck (Redunca redunca), while primates include the Patas monkey (Erythrocebus patas) [16] .

In other hand, Hippopotamus (Hippopotamus amphibious), Nile crocodiles and perch, and other freshwater fishes, amphibians and reptiles hosted by rivers at Gambella National Park. Furthermore, variety of fresh water fishes, amphibian and reptile species are found in this region [16] .

b) Unique features

The flat landscape that supports deciduous woodlands, grassland vegetation and plain games, and perhaps be one of the best wildlife areas of the country. It also has high set of Wildlife, which the country shares with neighboring countries including White-eared kob, Nile Lechwe, Roan Antelope, Topi and Elephant. Further-

Figure 9. Some of the landscape and wildlife of Gambella National Park.

more, the near threatened Shoebill and Basra Reed Warbler have been recorded. The area holds 11 Sudan-Gui- nea Biome species holding 69% of Ethiopia's total assemblage for this category. The largest wetland area and four major rivers crossing the park (Baro, Alwero, Gilo, Akobo) is one of the tourist destination sites in Ethiopia.

2.4. Peace and Security Promotes Wildlife Tourism

Other important aspects for tourism industry are peace and security of either the site or country, where tourists hosted. The multi-cultural and great hospitality of people with various ethnic groups who speak their own language and identity in every corners as well as variety of religious ceremony have its own contribution for tourism development. In East Africa, Ethiopia, Rwanda, Tanzania and Uganda are likely to achieve growth of between 6.5% and 7.5% in 2014/15 [39] . In contrary, growth in Sudan continues to remain passive and violation due to disruptions and ongoing conflicts. Furthermore, the economy of the Central African Republic is heavily affected by the political and security conflict, and prospects remain uncertain [39] . Therefore, the absence of conflict and terrorist or peaceful and security play an important role

to promote sustainable nature based tourism which directly affects country's economy. Political stability and security is one of the essential prerequisites for attracting international tourists to a destination. In the contrary, violent protests and civil wars will cause damage to infrastructure and tourists to cancel their leisure to the country [40] . Hence, the number of visitors towards protected area is increasing in Ethiopia (Figure 10).

3. Challenges of Wildlife Tourism

3.1. Loss of Biodiversity

Many protected areas in Ethiopia are threatened due to ever increasing of population, habitat loss and degradation [19] . Land use changes through agriculture, rural and urban development activities have led to the decline and alteration of wild areas, resulting in the extinction to wildlife species and natural areas which serve as their habitat. I tried to address some of the root causes of losses of biodiversity which directly impose wildlife tourism and biodiversity conservation.

3.2. Human Wildlife Conflict

Conflicts over natural resources between the communities living adjacent to protected area and tourism development have increased in recent years because of changes in land use and accompanying new ideas about wildlife resource management and utilization [41] .

The varieties of large animals in Ethiopia are many and their distributions are dependent on the protected

Figure 10. Visitor's statistics on protected areas tourism. *assuming 15% growth rate [17] Source: Ethiopian wildlife conservation authority.

areas (primarily on national parks and sanctuaries) with insufficient protection [19] . Currently, these protected areas are highly threatened by anthropogenic effects. Human-wildlife conflict is a major concern of most people living next to protected areas in developing countries due to their subsistent live [4] [12] . It arises when growing human populations needs overlap with protected areas and results scrambling for resource. As the Ethiopia's population increases, there is an increasing demand for space and resource utilization and affects wild animal's habitat on the protected areas. For example, in Simien Mountains National Park, the population of Walia ibex has decreased due to agricultural expansion affects their habitat [34] . The endemic gelada baboon was the major causes of conflict with local communities because of their farmlands in these villages were located close to the habitat of gelada baboons [34] . In the same scenario, the Senkelle Wildlife Sanctuary's total area were 200 km^2 with more than 3000 population of Swayne's hartebeest during 1972 and but currently shrunken to only 54 km^2 with 800 population due to population growth and agricultural expansion [35] [42] (Figure 11).

3.3. Deforestation and Forest Degradation

Deforestation resulting land degradation is the global threats for many wild animals with its natural habitat and affects the wild animal's life style in their preferred habitats. The forest cover of Ethiopia has been approximately 40 % of its land a century ago but now has declined to only 3% [43] . The extensive deforestation has also led to the extinction of various biot as resulting in significant biodiversity loss. Now, more than 17.1% of the country's land is protected area. However, much of this is forest land that is now widely used for cultivation, grazing, fuel wood and construction. Restricting the comparison to category I and II protected areas (i.e. National Parks and Wilderness Areas) approximately 2.7% of the land surface is only protected at this level which is lower than its neighbor country (Figure 12). The human popu-

lation around most protected areas over the years has been changing in terms of its size, density and livelihood strategies [44] . Uncontrolled logging, illegal charcoal production and fuel wood collection are some of the major causes of deforestation that directly influence large mammal's habitat, where tourism is dependent. Moreover, such activities impose to decline the scenic beauty of the protected area which also affects tourism and wilderness (Figure 13).

3.4. Poaching

Poaching and illegal wildlife trade activities in and around the park, as well as the unwise use of natural resources have been the major problems facing the park and have led to the extinction of some fauna species [45] . It leads to detrimental environmental, economic and social consequences. Over time, the international community has become aware of the fact that poaching is the most immediate and direct threat to wildlife in Africa making its upward trend a cause of serious concern. In some parts of Ethiopia like Gambella, Ethiopian Somali and Afar areas, poaching has been practiced for income generation and agricultural practices [46] (Figure 14).

During the 1970s, trophy hunting was also conducted on a large scale in Ethiopia, though since then, aggregate human populations, political instability and encroachment on wildlife habitat have resulted in a 95% de-

Figure 11. Some pictures of human wildlife conflict.

Figure 12. Land surface area that is within National Parks (IUCN Categories I & II) of Ethiopia and some of its neighbors.

crease in the area used for trophy hunting. Trophy-animal hunting (e.g. elephant or buffalo) accumulate high revenue for safari hunters and provide income for the rural resident communities. Mountain nyala (Tragelaphus buxtoniis) is the most commonly species used by operators to attract visiting hunters to Ethiopia [47] . However, over exploitation of wildlife resources negatively affects the population of many large animals and habitats, where tourists recreate.

4. Conclusion

The wildlife tourism industry of Ethiopia is mainly dependent on protected areas (national parks and sanctuaries). The country has rich in wildlife diversity; exclusively large mammals and attract many tourists locally and internationally. Nature based tourism offers high revenue away from agricultural production. The Ethiopia's protected areas are expanding; currently more than 55 including national parks and sanctuaries. The three eco-re- gion; montane and Afroalpine ecosystem, Great Rift Valley and southwestern transboundary ecosystem are best tourism destination in Ethiopia. Nature-based tourism which serves dual purposes; protects the various unique wildlife species and improving the livelihoods of local communities. However, protected areas and tourism destination sites are under severe threat. Failure to conserve protected areas will have dire consequences for biodi-

Figure 13. Deforestation practices (Photo by Alemneh Amare, 2015).

Figure 14. Some challenges of wildlife tourism and wildlife conservation.

versity conservation; will preclude the sustainable use of wildlife as a development option and have long term negative impacts on tourism industry in general.

5. Future Direction for Nature-Based Tourism and Wildlife Conservation

The wildlife conservation authorities have to; stress on to decrease the negative impacts on nature and culture which damage a tourism destination through education or teaching the importance of conservation benefits. Direct revenue from conservation and management of protected area, strive and maximize economic benefit for the host country and local communities, especially peoples living in and adjacent to protected areas. Further infrastructure expanding and the locals have to be benefited from the visitors.

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References

1. 1. Sinha, C. (2001) Wildlife Tourism: A Geographical Perspective. Conference Paper, 1-23.

2. 2. Akama, J.S. (1999) The Evolution of Tourism in Kenya. Journal of Sustainable Tourism, 7, 6-25. http://dx.doi.org/10.1080/09669589908667324

3. 3. Nelson, F. (2009) Reforming Wildlife Governance in East and Southern Africa: The Role of Corruption. Working Paper, 7.

4. 4. Wolff, J.V. (1961) Wildlife in Ethiopia. Ethiopian Forestry Review, 2, 3-13.

5. 5. Irandu, M.E. (2004) The Role of Tourism in the Conservation of Cultural Heritage in Kenya. Asia Pacific Journal of Tourism Research, 9, 133-151.http://dx.doi.org/10.1080/1094166042000233658

6. 6. Shackley, M. (1996) Wildlife Tourism. International Thomson Business Press, London.

7. 7. Orams, M.B. (2002) Feeding Wildlife as a tourism Attraction: A Review of Issues and Impacts. Tourism Management, 23, 281-293. http://dx.doi.org/10.1016/S0261-5177(01)00080-2

8. 8. Tisdell, C. and Wilson, C. (2003) Economics of Wildlife Tourism. Working Paper, 88.

9. 9. Hendee, J. and Roggenbuck, J. (1984) Wilderness Related Education as a Factor Increasing Demand for Wilderness. Paper Presented at the International Forest Congress Convention, Quebec City.

10. 10. Young, J. (2012) Ethiopian Protected Areas: A “Snapshot”. Word Press, Addis Ababa, 23.

11. 11. EBI (2014) Ethiopia’s Fifth National Report to the Convention on Biological Diversity. Ethiopian Biodiversity Institute, Addis Ababa.

12. 12. Amare, A., Hernandez, A., Mekonnen, A., Hylander, K. and Hayward, M.W. (In Preparation) Human-Wildlife Conflict in and around Gibe Sheleko National Park, Southwestern Ethiopia.

13. 13. Bekele, A. and Yalden, D. (2013) The Mammals of Ethiopia and Eritrea. Addis Ababa University Press, Addis Ababa.

14. 14. Yalden, D. and Largen, M. (1992) Endemic Mammals of Ethiopia. Mammal Review, 22, 115-150. http://dx.doi.org/10.1111/j.1365-2907.1992.tb00128.x

15. 15. WCMC (1994) Biodiversity Data Sourcebook. World Conservation Monitoring Centre, World Conservation Press, Cambridge.

16. 16. Blower, J. (Undated) The Wildlife of Ethiopia. Oryx, 13, 276-283.

17. 17. Vreugdenhil, D., Vreugdenhil, A.M., Tilahun, T., Shimelis, A. and Tefera, Z. (2012) Gap Analysis of the Protected Areas System of Ethiopia, with Technical Contributions from Nagelkerke, L., Gedeon, K., Spawls, S., Yalden, D., Berhanu, L. and Siege, L. Ethiopian Wildlife Conservation Authority (EWCA), Addis Ababa.

18. 18. Tefera, M. (2011) Wildlife in Ethiopia: Endemic Large Mammals. Current Zoology, 6, 108-116.

19. 19. Amare, A. (2015) Conservation Challenges of Gibe Sheleko National Park, Southwestern Ethiopia. Natural Resources, 6, 286-289.http://dx.doi.org/10.4236/nr.2015.64025

20. 20. Dickinson, E.C. (2003) The Howard and Moore Complete Checklist of the Birds of the World. Revised and Enlarged 3rd Edition, Princeton University Press, Princeton.

21. 21. Fish Base. http://www.fishbase.org

22. 22. Living National Treasures: Ethiopia. http://lntreasures.com/ethiopia.html

23. 23. Reptile Database. http://www.reptile-database.org/

24. 24. Groves, C.P. (2005) Order Primates. In: Wilson, D.E. and Reeder, D.M., Eds., Mammal Species of the World: A Taxonomic and Geographic Reference, 3rd Edition, Johns Hopkins University Press, Baltimore, 111-184.

25. 25. Kingdon, J., Gippoliti, S., Butynski, T.M., Lawes, M.J., Eeley, H., Lehn, C. and De Jong, Y. (2008) Cercopithecus mitis. In: IUCN 2010, IUCN Red List of Threatened Species. Version 2014.1. www.iucnredlist.org

26. 26. Bruche, S., Gusset. M., Lippold, S., Barnett, R., Eulenberger, K., Junhold, J., Driscoll, A.C. and Hofreiter, M. (2012) A Genetically Distinct Lion (Panthera leo) Population from Ethiopia. European Journal of Wildlife Research, 59, 215-225.http://dx.doi.org/10.1007/s10344-012-0668-5

27. 27. Wolff, J.V. (1961) Wildlife in Ethiopia. Ethiopian Forestry Review, 2, 3-13.

28. 28. Zelalem, T. (2007) Community Attitudes towards Wildlife Conservation in Ethiopia. Proceedings of the 2007 George Wright Society Conference, 287-292.

29. 29. Murray, M. and Admasu, B. (2013) Development of a Marketing Strategy for Wildlife Tourism in Ethiopia. Unpublished Report, 65.

30. 30. Reddy, R.U. and Workeneh, S. (2014) Conflicts between the Conservation of Elephant and Human Activities: In the Case of Babile Elephant Sanctuary (BES), Ethiopia. European Academic Research, 2, 1280-1292.

31. 31. Tedla, S. (1995) Protected Areas Management Crisis in Ethiopia. Walia, 16, 17-30.

32. 32. Wilfred, P. (2010) Towards Sustainable Wildlife Management Areas in Tanzania. Tropical Conservation Science, 3, 103-116.

33. 33. Birdlife International (2001) Important Bird Areas in Africa and Associated Islands—Ethiopian Wild Life and Natural History Society. Unpublished Report, 32.

34. 34. Yihune, M., Bekele, B. and Tefera, Z. (2008) Human-Gelada Baboon Conflict in and around the Simien Mountains National Park, Ethiopia. African Journal of Ecology, 19, 1-7.

35. 35. Kumsa, T. (2006) Human-Wildlife Conflict and Population Status of Swayne's Hartebeest (Alcelaphus buselaphusswaynei) in Senkele Swayne's Hartebeest Sanctuary. Master's Thesis, Addis Ababa University, Addis Ababa.

36. 36. Wolde-Yohannes, D. (2006) Diversity, Distribution and Relative Abundance of the Avian Fauna of Chebera Churchura National Park, Ethiopia. Master's Thesis, Addis Ababa University, Addis Ababa.

37. 37. Admasu, M. (2006) History and Status of the Population of African Elephant (Loxodonta africana Blumbenbach, 1979) and Human-Elephant Conflict in Chebera Churchura National Park, Ethiopia. Master's Thesis, Addis Ababa University, Addis Ababa.

38. 38. EWNHS, Ethiopian Wildlife Natural History Museum Society (2001) Important Bird Areas in Ethiopia. Review Paper, 291-336.

39. 39. African Development Bank (2014) African Economic Outlook. Unpublished Report, 58.

40. 40. Ondicho, T.G. (2000) International Tourism in Kenya: Development, Problems and Challenges. EASSRR, 9, 49-69.

41. 41. Magige, F.J. (2012) Human-Wildlife Interaction in Serengeti and Ngorongoro Districts of Tanzania: A Case Study on Small Mammals. Tanzania Journal of Science, 38, 95-105.

42. 42. Messana, G.M. and Bereket, N. (1994) The Senkele Swayne's Hartebeest Sanctuary Management Plan. Ethiopian Wildlife Conservation Department, Addis Ababa.

43. 43. Bishaw, B. (2001) Deforestation and Land Degradation in Ethiopian High Lands: A Strategy for Physical Recovery. North East African Studies, 8, 7-25.http://dx.doi.org/10.1353/nas.2005.0014

44. 44. Masanja, G.F. (2014) Human Population Growth and Wildlife in Ugalla Ecosystem, Western Tanzania. Journal of Sustainable Development Studies, 2, 192-217.

45. 45. Meduna, A.J., Ogunjinmi, A.A. and Onadeko, S.A. (2009) Biodiversity Conservation Problems and Their Implications on Ecotourism in Kainji Lake National Park, Nigeria. Journal of Sustainable Development in Africa, 10, 59-73.

46. 46. Stuart, S.N., Adams, R.J. and Jenkins, M.D. (1990) Biodiversity in Sub-Saharan Africa and Its Islands: Conservation, Management, and Sustainable Use. Occasional Paper of the IUCN Species Survival Commission, 86.

ARCHAEOLOGY AND HERITAGE RESOURCE MANAGEMENT IN SIUYU, SINGIDA REGION (TANZANIA)

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ABSTRACT

This paper was produced as a part of our ongoing research endeavors in Singida destined to provide a better understanding of early humans' cultures, and to promote the conservation of cultural and natural heritages of the region. The overreaching goals of this research are to holistically reconstruct the archaeology of Singida by studying cultural processes over time and space. Equally important is to promote tourism in the Singida eastern axis and, to salvage the heritage assets of the region from total disappearance as evinced by the activities of modern day civilization, broadly, to shed more light about the past life ways, and the subsistence behaviours of our ancestors. Our recent archaeological reconnaissance conducted in January 2016 in Siuyu ward discovered rock paintings and a rock shelter with archeological potential (Ngaghe rock shelter), containing a large scatter of Later Stone Age (LSA) archaeological artifacts that are crucial to the unravelling of the prehistoric human behaviours in Singida. Preliminary results from our research revealed that Singida region is an ideal place for undertaking research on early human bio-cultural evolution from LSA times to the present. Data from this study will be utilized to re-write the history of Singida region, to make sure that it is sustained for future generations. Despite their rarity, uniqueness, scientific and aesthetic values, these heritage assets are neither protected by village nor regional by-laws. Before deliberate conservation measures are put in place, it is very important to have good records of the areas that are attractive to tourism, and their current state of preservation. These sites were undocumented by the previous researchers, and in certain circumstances are unknown even to the local people of the Siuyu ward. Although the archaeology of Singida east is much "terra incognita", this article is timely, for promoting archaeo-tourism and raising public awareness on the archaeology of Singida. Additionally, this work provides a stimulus to the authorities to take action by introducing effective conservation measures for the sustainability of these priceless non-renewable resources.

Keywords:
Archaeology, Heritage Conservation, Cultural and Natural Resources, Tourism

1. Introduction

The Singida region has been known archaeologically for the last few decades for its endowments of prehistoric rock painting sites. Together with the Dodoma region, the Kondoa Irangi, and the Usandawe areas form the famous belt in central Tanzania with rich and diversified rock paintings made by hunter-foragers and Bantu speaking communities. Significantly, a substantial number of archaeological localities of Later Stone Age (LSA) and Iron Age (IA) have been recovered in Singida dated at approximately 45,000 BP and the 10,000 - 2000 years old.

In terms of archaeological investigations, unlike the Northern axis, Singida eastern axis has had been neglected by researchers. Since the works of Ludwig and Margrit Kohl-Larsen (rock art researchers) in Singida north, Iambi and Iramba plateaus between 1934-1935 and 1958; Masao 1976, 2005, and Mahudi 2008 [1] [2] , very little archaeological work has been reported or carried out in Singida east. These early expeditions were thematically similar in the sense that were framed on zonal preferences, and concentrated broadly on surveys and documentation of archaeological sites that were previously reported by the missionaries and colonial administrators. Despite their regional, zonation prejudices, and biases, these scholars produced detailed sketches of the rock paintings subject matter, and published their findings in their books: "Felsmalereien in Innerafrika" and "Die Bilderstrasse Ostafrika" in 1938 and 1958 [1] - [5] .

The only notable extensive archaeological investigations in Singida eastern axis were carried by Fidelis Masao [6] , followed by a big hiatus before the works of Audax Mabulla and Makarius Itambu in 2014/2015 [7] who surveyed and described the archaeological sites extensively, and studied the meaning and subject matter of the rock art. They also made assessments on the state of preservation of the rock art and their sites [7] and deliberately advocated for community involvement in conservation of natural and cultural heritage of Singida east by launching heritage management awareness campaigns. They also emphasized the importance of participation by the local people in rock art conservation. Some of the sites mentioned by Masao in 1976 were revisited by Mabulla and Itambu in their 2014-2015 expeditions. Their renewed archaeological voyages discovered more archaeological sites in Misughaa, Siuyu (Itraghatra and Misimbwa), Kinku (Ndaa A Ng'ongo), Issanga, Ughaugha, Mahambe, and Mang'onyi that were not initially reported by the early pioneers.

2. Background Information

The Singida region is one of the most compelling areas of geological and archaeological research in Tanzania. This region is marked by the impressive and massive, isolated hills, inselbergs and granite outcrops, the land of small and large plateaus, and escarpments that form a unique and beautiful natural landscape. The region is a landlocked one situated in the middle of the country. It lies in the semi-arid zone of Tanzania's central plateau between longitude 33˚24'E and 35˚1'2E and latitude 3˚42'S and 7˚06'S (Figure 1).

This study focused on the Singida eastern axis in the Ikungi district, specifically in areas surrounding and adjoining Siuyu ward. The Ikungi district is one among the five (5) districts forming the Singida region. This is a newly established district formed in 8th, March 2013 through government gazette no. 87. The Ikungi district is within 4º to 6˚ latitudes south of the equator and between 34˚45' to 35˚45' East of Greenwich meridian [1] [7] . The district borders Uyui district of Tabora region in the south, Singida municipal and Singida rural from the north, Iramba from the northwest, Chemba and Kondoa from the northeast and Manyoni from the south. The south-western zone that borders Uyui and Manyoni districts has fertile soils while the rest has less fertile (sandy soil) which is only suitable for production of semi-arid adapted crops [6] . The Ikungi district is made up of four [7] divisions namely Sepuka, Ikungi, Ihanja, and Mungaa (where this area was conducted i.e. Siuyu ward-see Figure 1).

2.1. Topography, Climate, Peopling and Their Socio-Economic Activities

Singida region forms part of the semi-arid central zone of Tanzania which experiences low rainfalls and short

Figure 1. Map of Tanzania showing the location of the study area.

rainy seasons which are often erratic with fairly wide spread droughts in one year out of four [8] . Geologically, the basement rocks which are type of Dodoman system are ubiquitous in the region and they are part of the Dodoman system, formerly referred to as the Lower Basement Complex [8] [9] . These rocks consist of a complex of pellitic schists, granitic gneisses and migmatites, ranging in mineral composition from potassic granite to diorite [7] .

The prototype vegetation of Singida region and central Tanzania in general is consisting of savanna woodlands (largely miombo or Brachystegia sp.) with small pockets of montane forests and savannahs [1] - [4] . Contemporary intensification of tree clearing for agricultural activities, timber, and wood for house construction, firewood, and charcoal burning have greatly reduced the amount of natural biomes. In the study area, savanna woodlands composed of Brachystegia sp. still exist in Ngimu-Mugori, Mwisi, Lighwa, Ntewa-Ntutu, Thrau-Mang'onyi and Musule-Misughaa, though threatened by human activities. Animal husbandry and other anthropogenic activities have reduced the natural habitats and the number of wild animals.

The Ikungi district experiences even temperatures, with minima and maxima of 15˚C and 30˚C respectively. Nonetheless, there has been notable rise in ambient temperatures in the last four decades. The annual rainfall ranges from 600 mm to 700 mm. These climatic conditions favour the production of certain types of semi-arid adapted agricultural crops. The district has three main agro-economic zones, namely; the northern zone, the south west, and the eastern zone that lies within the vicinity of the Rift Valley.

The Wanyaturu (Turu/Rimi/Arimi people), and Wanyiramba, the predominant tribal groups in the area, are small-scale agriculturalists and cattle herders that are generally living in cleared areas close to the margins of the woodland. The Ikungi district is chiefly inhabited by agro-pastoral Wanyaturu that are forming about 95% of the total population [7] . The remaining 5% is composed of the hunter-foragers Wasandawe, and the pastoral Wabarbaig and Wadatoga tribes. Although agro-pastoralism has been practiced in this area, presently crops husbandry is the chief economic activity with about 90% of the residents depending on it as the source of their livelihoods.

Predominantly, the Singida rural and Ikungi areas among Wanyaturu are deeply attached to livestock and simple cropping systems. The shifting cultivation of sorghum, millet, and finger-millet forms an integral part of their daily diet. Other agricultural crops grown in this part include sweet potatoes, sunflower, beans, groundnuts, and maize. On top of that, one can argue that sunflower cultivation within homesteads has attained a status of a dominant cash crop. This cash crop, in contrast with the past, is acting as a substitute to food crops, due to the fact that it superbly withstands the arid soils of the region. The limited resource-base and poor aridic soils, and variable rainfalls has resulted in food shortages in the months of December, January, and February. The northern zone bordering Singida district council and Singida municipal, made up of the Ihanja and Sepuka divisions, has very fertile gravel-loamy and clay soils that favours the production of various crops. Agricultural crops produced in this part of the region include sorghum, finger millet, cassava, sunflower, onions, millet, sweet potatoes and lentils (dengu).

The eastern zone is occupied by the East African Rift Valley and is bordered by Kondoa district (Dodoma region) and Singida municipality. This zone occupies Ikungi and Mungaa divisions. The surface of Wahi-Arimi, the sub-tribal area in which this study was conducted (Siuyu Ward) is desiccated and undulated with hills, ridges, and bottom valleys of marshy land that are suitable for growing potatoes [7] . It is estimated that about 15 percent of the workforce in the district engages in other activities such as timber, fishing, small industries (sunflower oil processing) and small scale mining (salt) activities. This part of the Singida

eastern axis are primarily settled by Wahi and Anyamunying'anyi-Wanyaturu. Their livestock are grazed on the open lands around the village or in the nearby forests until the grass is gone; otherwise the marshes are expected to support them during the dry seasons of June to November.

In some villages, however; there are forest reserves that provide not only building materials, medicine, and parts for tools, but also fuel. Customarily and frequently, this is gathered by the women, while men are responsible for traditional houses construction, other construction work, and cattle grazing. Unfortunately, the agricultural sector has been negatively affected by a number of factors such as arid climatic conditions (dependence on rain fed agriculture) and poor physical infrastructure, particularly roads. As a result, people's incomes in the district has been affected. The average farm size per peasant household is 5 acres of a subsistence farm. At this moment in time, a by-law has passed stipulating a district "by-law" that requires a farmer to have 2 acres of each food and cash crops respectively to ensure food security. They are encouraged to grow semi-arid climate- tolerant, and disease-resistant crops such as cassava and sweet potatoes because of the drought nature and general episodic drying trends of the region (Mwl. Pius Jingu pers. comm., January 2016).

2.2. Study Area Profile

Siuyu (S 5˚07'59.00", E 39˚46'0.01") is an administrative ward in the newly Ikungi district formerly known as Singida rural district. According to the 2002 census, the ward had a total population of 8632 [10] but due to the improvement of social services, the population size is estimated to be presently around 12,000.

Around the vicinity of Siuyu ward there is a bunch of inselberg hills, kopjes, and ridges that are separated by mbughaa bottom valleys (black-clay soils), common everywhere in the Singida eastern axis. They are also marked by the ubiquitous granite outcroppings, sometimes of giant proportions, that appear here and there in every village (Ngong'o A Urimi as the most popular one). The internal drainage of the Siuyu created marshy lands and swamps, traditionally called "mbuugha" (black cotton soils/cracking clays). These clay-black cotton soils are composed of calcareous [11] . These black fissured clays vary greatly in size-from small patches which dry out quickly when the rains stop, to giant expanses, especially in the Singida depression, some of which, like lake Mugori and Muyanji dam hold surface water perennially. Since most depressions are shallow and hold only a little surface water, the swamp grasslands "Inyee" can be used for grazing during dry seasons (i.e. Mudenku, Malelemi, Nali-Nghage Donye). These unusual semi-arid conditions, combined with the fact that the swamps are numerous and provide a permanent water-supply, has had been a highly significant factor in the consolidation of sedentary settlements that led to the collapse of nomadic pastoralism.

The livelihoods of the majority of inhabitants of Wahi-Arimi in Siuyu (Figure 1) are mainly dependent on agriculture (crop production) and livestock keeping and, in particular, indigenous poultry. To a lesser extent, horticulture (neighbouring permanent swamps), and small business enterprises that forms the extra-economic activities of most of the Ikungi inhabitants. The district economy is heavily tilted towards agriculture as more than 85 percent of the population are engaged in crop cultivation and livestock keeping. However, the level of agricultural mechanization is very low with large a proportion of the farmers solely depending on the traditional hand hoe for tilling arable lands.

In all aspects of life, patriarchy is highly dominant in Singida east. The men are the decision-makers and women are mainly responsible for children-rearing and other domestic duties. However, women's workloads in the study area is not correlative to men's daily duties due to the fact that women are more productive, chief producers, and important contributors to household incomes.

Our research identified that most of the archaeological sites in Singida eastern axis look like Kondoa (Plate 1) localities. They appear high up on silent bush covered hillsides, invariably overlooking some plains, a valley or a river. Seldom do these sites occur on low-lying ground and such is also the case with most of the South African rock art sites. Several reasons have been provided for such locations to have been favored. Hill slope sites commanded wide, lovely views out over far reaching plains and immediate areas around providing the best vantage point, for watching for game or for self-defence against their foes (also see Figure 2 [1] - [4] [6] [7] [12]).

Figure 2. Map of Siuyu village showing location of the Ngaghe rock shelter.

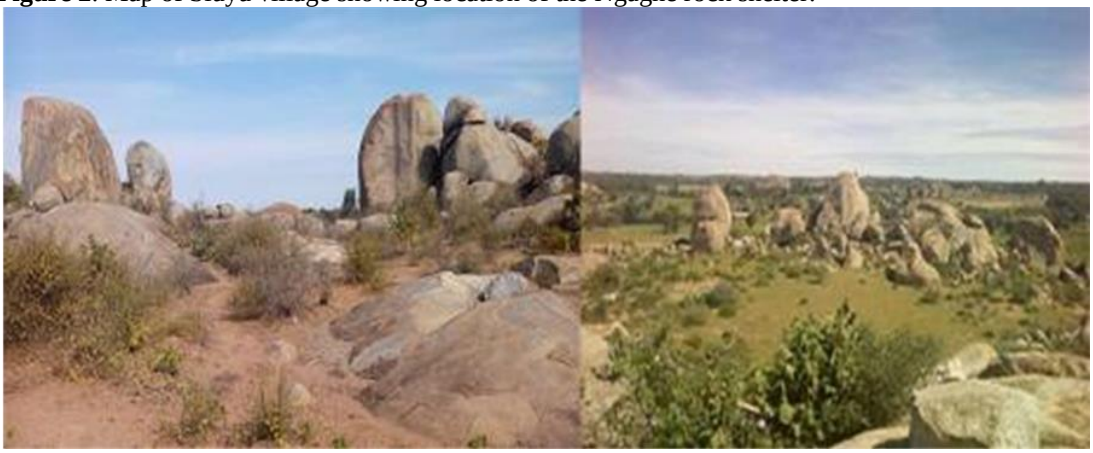

Plate 1. Ngaghe granite outcrops in Siuyu ward (Photo: Courtesy of Fr. A. Bukenya & Ambrose Leo Dede).

3. Materials and Methods

3.1. Ethnographic Enquiries and Surveys

The geographical location of a rock art sites was documented using a hand-held Global Positioning System (GPS) device. We also used a high-resolution Sony digital camera for photographs. In some cases, ethnographic enquiries were employed in order to get supplementary information. Besides, we interviewed local people in order to assess their general understanding of the natural beauty of the rock boulders, and other heritage resources that are potential for touristic activities in Siuyu. We did this because we wanted to know whether there are any traditional approaches/strategies in which they have been practicing or involved in the management and conservation of these resources.

Furthermore, we needed to spot archaeological sites and artifact distribution as indicated by the surface scatter of archaeological materials. This was very crucial in identifying potential sites to be excavated in the near future. Thereafter, followed an intensive survey whereby we looked at the nature of the landscape, the altitude, natural vegetation type, and proximity to the water sources since they might possibly have influenced the painters to choose the site [3] [4] [13] [14] .

Simultaneously, the fieldwork team looked at material cultures occurring on the surface. Due to the rough, rocky terrain of Siuyu ward, we decided to conduct a deliberate/purposive sampling technique. We mainly focused on the naturally exposed granite rock boulders, and rock shelters with general assessments on the panoramic view of the landscape. The hilly na-

ture of the sites forced us to conduct unsystematic surveys that involved walkovers across the Precambrian granite outcrops, without being guided by systematic grid boxes or transects of any kind as archaeological surveys normally undertaken (see Plate 2).

3.2. Survey Results

3.2.1. Ngaghe Rock Shelter (UTM 36 M 0713662/9455875)

This rock shelter has an elevation of 1355 m, located at about 2.5 km southwest of Siuyu ward (E 7˚39'32"; S 34˚28'22"). The site is surrounded by Precambrian granite-kopjes and inselbergs, and the general vicinity of the rock shelter and its landscape is largely composed of LSA stone artefacts, slag and potsherds (Plate 3). The

Plate 2. A reconnaissance survey in Ngaghe rock shelter (Photo credits to N. M. Hongoa 2016) geomorphology and ecological settings of the archaeological site is correlative and similar to other rock painting sites that had been reported in Kondoa, Lake Eyasi basin, Meatu and Iringa, as both are consisting of a massive inland plateau with isolated mountains and numerous granite exposures of the Precambrian era ([3] - [5] [12] - [14]).

In most parts of the study area, the rock shelters with archaeological artifacts occur mainly in the highlands, and they are commonly scattered along the Precambrian granite rock outcrops. Dry forests, shrubs, bush savannah and occasionally grassy plains surround these rocky highlands. Our ancestors (prehistoric people) probably selected mountainous landscapes for arty executions as the painted arts can probably survive longer [14] , or for security reasons/defence as the geomorphology of the landscape discourages and limits access to potentially dangerous wild animals. In spite of its archaeological potential, the sites' temporal encroachment threatens its survival e.g. the wild sisal fence put in the proximity by the Pallottine Catholic Missionaries to demarcate the boundaries of their marshy farmlands they recently bought from the village government.

3.2.2. Itramuka Rock Paintings Site

Itramuka rock painting is found in the Itramuka hills in Misimbwa hamlet of Siuyu Ward. The northeastern side of Misimbwa is dominated by scatters of isolated hills and rocks that continue eastward to join the Mugori rift escarpment. These hills and the associated rift escarpment is what is known as the Itramuka hills and escarpment, and is the location of the hunter-foragers faded rock paintings [7] . The painting site is located on the footslope of the Itramuka rift escarpment overlooking Mugori valley [7] . The site occurs on the escarpment's slope in woodland vegetation and has an approximate elevation of 1400 m a.s.l. This is a combination of a rock shelter and three overhangs, two exterior overhangs and one posterior overhang.

The shelters face south east and east, and it is at least 5.5 m long and 7.5m wide from the modern drip-line to the back wall [7] . There is a large rock (slab) underneath the shelter, which is climbable and may have been used by the painters as a scaffolding to paint the imag-

es high up on the shelter. The height of the rock shelter is about 7.5 m high. About six stone artifacts were spotted on the surface of the shelter's floor. The overhang faces east and is about 5.8 m long, 2.5 m wide and 7.4 m high. The painting subject matter includes naturalistic animals, humans, geometric, and amorphous or abstract figures (Plate 4). This is the most suitable site for public displays, and for tourist treks because the paintings are in a fair to very good state of preservation.

Plate 4. An execution of a hunting scene: naturalistic eland and a human figure at Itramuka rock Shelter (Photo: Courtesy of AZP Mabulla 2014).

3.2.3. Misimbwa Rock Shelter (Overhang)

The shelter has lots of archaeological materials scattered on the floor such as potsherds, slag, bones and lithic artifacts. Surface area of the shelter measures about 115 m^2. The site is highly vandalized by iron-smelters and treasure hunters [7] . There is a big hole in shelter probably dug by treasure hunters. The Rock-shelter contains few dusky red geometric paintings. At least 5 figures executed on overhangs' panel. The majority of the paintings are faded due to the anthropogenic, and other chemical actions (Plate 5). The site is not attractive for cultural tourism and public display because of vandalism. The overhang is exposed to wind, rain, temperature, water seepage, biological encrustation, and all of these contribute to the deterioration of the site by the process known as weathering [14] . Water and the organic acids secreted by lichen and other growths can slowly alter a sound and hard rock until it becomes chemically weathered.

The documentation and recording of the Misimbwa rock art were a part of our heritage salvaging mission before the art totally disappeared. This research was facilitated by one of

our local informants; Mr Mukhotya Mourice, who informed us about the existence of the paintings in Misimbwa area, and how the site was vandalized by the treasure hunters.

3.2.4. Siuyu Is an Ideal Place for Tourism Activities in Singida Region

The archaeology of Siuyu presently can be compared, likened, and be ascertained as similar to Kondoa Irangi, Lake Eyasi basin, Singida north, and Iringa in terms of Later Stone Age (LSA) cultures as depicted by stone tools occurrences, rock art repertoires, and the painting's stylistic affinities. This study refuted the long-time belief and an inherent bias that LSA sites, and rock art sites are only found in Kondoa Irangi in central Tanzania. This fallacy should be completely wiped out; especially in Tanzanian primary schools, and secondary schools' history syllabi whereby for many decades they have been teaching that there are no archaeological or historical sites in Singida region.

Interestingly, this study has revealed the presence of these sites to our villages. For instance, Tanzanian secondary and high school history subject syllabi doesn't mention Singida as a region of uncontested, irrefutable, and incontrovertible archaeological or historical sites in the country. Archaeologically, Singida yields evidence of early human cultural evolution during the Pleistocene period that are contemporaneous to Kondoa, Babati, Lake Manyara basin, and the northern Tanzania highlands of the Iringa region (also see [5] [7] [11] - [15]). More studies should be directed to these areas in order to link the central Tanzanian circuit with northern Tanzania corridor, and the southern highlands of Iringa on research related to the early human biocultural evolution, the emergence of modern human behaviours, and the evolution of cognitive thoughts among prehistoric peoples. These will shed more light on the stone tool use by our ancestors, technological transitions, and early humans' adaptation to semi-arid environments.

Granite outcrop exposures such as Ghodou, Ginyikuuju, Issanga, Itraghattra, Itranghwe, Itranguja, Munini, and the Urimi rock shelters could be optimal avenues for Later Stone Age research (seePlate 6 , Figure 3 & Figure 4). We also have a future plan to undertake multidisciplinary research in a more collaborative manner. This is an appropriate time to address the need for further surveys in the region. In the present instance, it was only possible to conduct an exploratory type survey. In future years, the region should be kept under surveillance in order to take advantage of any newly exposed surfaces which could reveal the existence of further sites within the region.

Plate 5. The faded red friezes depicting naturalistic animals, possibly an eland? and a hyena at Misimbwa overhang rock shelter.

of the Siuyu Ward.

Figure 4. The opportunities for archaeo-tourism & the threats facing heritage resource conservation and management in Siuyu ward.

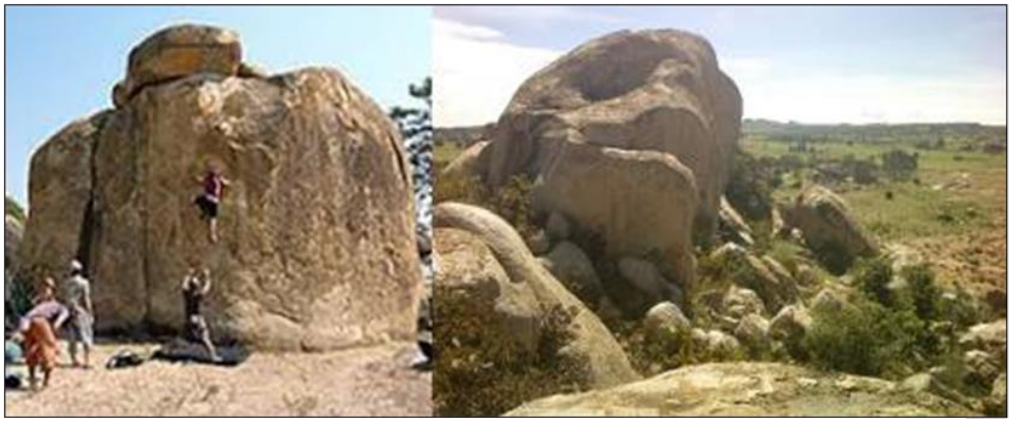

Plate 6. Singida granite rocks have suitable credentials for "rock climbing sports-tourism".

It is advised that surveillance be conducted in conjunction with the above recommendations. This would constitute the initial phase in the proper management of the archaeological resources in Siuyu ward and its adjoining localities. Impacts on archaeological resources can vary considerably from partial disturbance to total destruction of archaeological sites. All projects or activities will require an archaeological review to assess the level of threat to an archaeological resource and to determine the degree of mitigation, if any, required to remove or limit the effects of the threat. All the archaeological sites in the Siuyu ward settings are presently in grazing fields used by cattle, goats, donkeys and sheep. This is something that offers the best management option. The regular trampling by larger animals such as donkeys and cattle have caused frequent soil erosion on the wards' landscape.

4. Discussion

Despite the fact that the archaeological sites in this locality are highly vandalized by treasure hunters, some of the sites are suitable for archaeo-tourism and public displays. Essentially, the Itramuka rock shelter in Misimbwa has some well-preserved rock paintings that are invaluable assets to the country. These heritage patrimonies need to be publicized, promoted, and protected for sustainable utilization. By doing so, we shall literally make them the tourism attractions of Siuyu ward. If these heritage assets are properly managed, they definitely have the potential to enhance and influence tourist activities in the Siuyu Ward for many decades to come [7] . Some of the rock art sites are in excellent preservation conditions despite the numerous natural elements of deterioration. Vandalism is by far the most deleterious threat as evidenced by the big ditches that were dug under the rock shelters by the treasure hunters.

This is a national problem. Government authorities have done nothing to combat vandalism on heritage sites in Tanzania, and it has been a critical phenomenon which is completely out of control as sites' preservation conditions are worsening continuously. The vandalism occurs, in part, because of a local mythology in Tanzania that the colonialists had buried some treasure, supposedly including German coins and gold. The myth had spread extensively in Tanzania so that almost every painted rock shelter now has its floor excavated, negatively affecting archaeological deposits [13] [14] . With the greed and cupidity for immediate wealth, the treasure hunters set big fires on the base of the shelters or use dynamite to crack or exfoliate the bedrock and more easily excavate the shelters. The majority of the paintings are fainted because of the soot from those fires.

The myth that Germans hidden their rupees (coins) and other precious gems at those sites spread the belief that the paintings were markings executed by the Germans during and after the First World War as identification symbols, landmarks, and/or as the guide beacons to be used by them relocate for shelters under which they buried their treasures [13] [14] . Unfortunately, there is still much evidence that the practice of treasure-hunting continues to this day. The need to educate the local community about the scientific aesthetic and economic values of heritage resources has been forgotten. There is an urgent need for the joint efforts between the local government, the public and the Christian religious institutions in Siuyu to work collaboratively to protect these resources and to promote tourism in this area.

The local community should be sensitized about the significance of these paintings in order to boost and raise community awareness of the value and importance of heritage conservation. In Tanzania, most of the government institutions responsible for cultural heritage management believe that local people, religious institutions, and their respective leaders have no role to play in sustainable heritage management. Lack of heritage conservation education in most parts of Tanzania including Siuyu ward made the local people maintain their belief that rock paintings are signs left by German colonialists to relocate places they buried treasures. With an ever increasingly educated elite in Siuyu as well as the modernization of socio-economic subsistence and other occupational livelihoods, we need to manage the balance: “Modernization pressures of the globalized community vs heritage resources conservation” [4] . This is particularly evident in SiuyuWard whereby at least 95% of the population practices Catholicism. As a result, the art lost its life, depth and complexity of meaning in the minds of the contemporary generation.

These reasons make it imperative that we should wage deliberate efforts to salvage the rock art of Siuyu in particular, and Singida in general, from total disappearance as a result of development projects, encroachment of civilization, and new religious faiths, and to a lesser extent due to the impacts of climate change in the region [14] . These social-religious factors have to be managed and balanced, specifically by cultural and tourism managers in the region, to offer rights and participation of descendant communities who maintain traditions that inspired art and nature conservation. Such threats need serious mitigation measures; otherwise most of the paintings will disappear. This could be the result of vandalism by treasure hunters and other activities of present day modernization such as an emphasis on the value of digitization and technological advancement, in contrast to valuing traditional practices and technologies.

5. Conclusions

The general public, conservators, and managers who deal with cultural-environmental and social factors in tourism should jointly establish a “Heritage Management Plan” for sustainable conservation, management and environmental protection. The proposed Siuyu Heritage Management Plan will benefit the Singida region holistically and provide an integrated approach to archaeological resource identification and protection. The integrated conservation strategies will advocate a clear direction to development proponents, eliminating uncertainty or speculation about the regional archaeological partiality for both eco- and cultural tourism.

The proposed management plan will provide an effective tool for heritage site survey, identification, and conservation for the cultural, tourist guides, stakeholders, and tourism officers in Ikungi district. This can eventually be used by Ikungi municipal cultural officers for the purpose of screening sustainable conservation approaches and ensure archaeological resources are assessed, identified and protected by village authorities, as they are every day custodians and stewards of the archaeological sites [7] . Tourism promotion and outreach cam-

paigns should be launched in Singida eastern axis in order to offer protection that will enhance natural and cultural heritage preservation.

Furthermore, heritage and tourism promotion campaigns [13] [14] will be educating the local people in the development of a procedural framework for efficient land-use decision making that will ensure proper environmental management and protection. These endeavours will require frequent heritage management; promotion campaigns in Ikungi district, and in Singida at large. Linking the villages, wards, districts, and their municipal in strategic initiatives, such as cultural assets survey and mapping, heritage management, documentation, and conservation plans will raise awareness in heritage management and sustainability. Once more, this will help the responsible authorities to develop local policies, procedures and protocols for development and identify appropriate conservation strategies early in the planning process.

Recommendations and the Way Forward

This paper serves as a wake-up call for the Ikungi district officials that would encourage them to form heritage committees that will preside over the conservation and protection of archaeological resources, natural landscapes, and their environments in general. Tourism and conservation activities will benefit the host community and the nation as well. One can argue that Singida region is "unsung hero" in regards to tourism activities in Tanzania. Despite her beautiful hilly natural landscapes, that are composed of large granite rocks, and many Later Stone Age sites, and rock paintings; the region hasn't been recognised for its tourism potentiality until now.

Many conservation efforts in Tanzania have been directed to the national parks, game reserves, built monuments, ruins, and other areas with wild games. Unfortunately, the ecologically and geologically spectacular areas like Singida has been completely deserted and neglected by the responsible authorities i.e. the Ministry of Natural Resources and Tourism of Tanzania. If they are properly advertised, the huge granite rock boulders of Singida can furnish an outstanding contribution to the tourism industry. Similarly, in most parts of America, Australia, and Europe, there are popular hiking sports i.e. "Rock Climbing Sports' that annually gathers people to compete in climbing the huge boulders with higher peaks, rough surface, and the most difficult to climb rocks. This is a game in which participants climb up, down or across natural rock formations for fun or for professional competitions. The goal is to reach the summit of a rock or the endpoint of a usual pre-defined route without falling. Professional rock climbing competitions have the objectives of either completing the route in the quickest possible time or attaining the farthest point on an increasingly difficult route. The Siuyu locals should regularly partake in this sport, and the rocks can be marketed as a location for rock climbing sports. This sport is a healthy game, physically, and mentally refreshing sport that tests a climber's strength, endurance, agility and balance along with mental control.

Therefore, it is crucial to advocate on the synergistic potentialities of integrating archaeological sites e.g. rock painting sites and natural granite rock boulders for tourism endeavours in Siuyu ward, and in Singida regionally (Figure 3 and Figure 4). No any single area has many rock painting sites in Tanzania than the Singida region does; even the so famous, glorified, and well celebrated Kondoa Irangi (World Heritage Site), has fewer sites than Singida. The mistakes made by ignoring the Singida sites are largely because they are isolated and scattered, not clustered like the Kondoa Irangi sites. The fame of Kondoa paintings emanates from the fact that they are located on a series of closely spaced shelters, an alignment of many rock shelters along the granitoid slopes of the Maasai escarpment. Because of their east-west axis alignment, a visitor can have a tour of all the sites just for a day only while in Singida several days are needed to visit a majority of the painting sites. Accordingly, we are calling for the

joint conservation efforts that would give hope for future sustainable use of Singida's patrimonies.

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Disclosure

No potential conflict of interest is reported by either author.

3. Objectives

The specific objectives for identifying the economic transition in Nepal are the following:

1) To identify the time series trends of national per capita income, economic structure, per capita tourism revenue, prices of plant/animal fats, and food/livestock productions to explain where Nepal was in the economic transition over the past 40 years

2) To indicate where is Nepal in the economic transition within the Popkin's framework of the Nutrition Transition.

4. Data and Methods

This study adopts Popkin's methodology for the identification of economic transition. There are 10 proxy foci identified by Popkin to describe the Nutrition Transition, which are grouped into four categories-economic, demographic, dietary and epidemiological transitions, for the purposes of this analysis. Economic variables include three proxies-they are national income, the economic structure and relative prices of plat sources and animal sources of foods (Table 1). Tourism is also included in the proxies of the Nutrition transition as a unique trigger of the Asian region. Globally considered proxies for economic transition are the overall growth in Gross Domestic Product (GDP) per capita; changes in the contributions of economic sectors namely agriculture, industry and services in GDP; changes in the proportion of urban population to total population; changes in the per capita tourism revenue; a relative prices of plant oils and animal fats; and changes in relative indexes of food/ livestock supply.

Although time series data generally exhibit random fluctuations, a time series may also show gradual shifts or movements to relatively higher or lower values over a longer period of time. If a time series plot exhibits this type of behaviour, we say that a trend pattern exists. A trend is usually the result of long-term factors such as income increases or decreases, changing demographic characteristics of the population, technology, and/or consumer preferences, etc.

The average annual percentage of change/growth of economic proxy variables for the period of forty years starting from 1970 to 2010 has been computed using two methods. The first one is annual growth rate method hat that would take the country from first year's level to the last. The formula for the average growth/change rate adopted for the computation is ={100*(/)^(1/)}-100 [Or = {(1/time period-1) natural logarithm (ln) (/)}*100].

The second one is ordinary least squares trend line plotting method to predict the annual rate of growth for the exponential time line equation, which is minimizes the sum of squares of the difference between actual time series

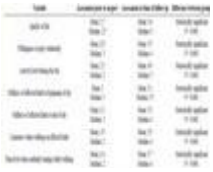

Table 1. Proxy foci, explanatory variables and data sources.

data and predicted time series data. Therefore, the estimated trend line is fitted best to capture the real trend of the past 40 years.

The various proxies of economic trends are described one by one in the different sub-sections based on the results derived from above two methods of growth/change and timeline equations.

5. Literature Review

East Asia's near tripling of real income per capita during the last 30 years is one of the most extraordinary economic phenomena of this century (WB, 1993) . Never before has income per capita grown so rapidly in such a large group of countries for such a prolonged period.

Numerous studies have sought to explain East Asia's economic "miracle". The literature highlights a wide range of possible explanations, including trade and industrial policies, technological progress, savings and capital accumulation, governance, education and health spending, geography and culture, and initial income levels (ADB, 2009) .

Economic growth in general and East Asia's unrivalled growth performance in particular, is not a mono- causal phenomenon (ADB, 1997) . Economic growth is affected by many factors, whose cumulative effects can account for much of East Asia's superior performance in relation to that of the world economy as a whole during 1965-90, as well as for the relatively poor performance of South Asia and Sub-Saharan Africa (WB, 1993) .

The literature is the generally superficial attention it pays to the influence of demographic factors on economic growth (ADB, 1997) . In recent years, investigators have revisited the connection between population and economic growth, emphasizing the demographic transition as the process underlying population growth in most developing countries (Bloom & Canning, 1999) .

As the population age distribution changes over the course of a demographic transition and beyond, levels of income per capita will change correspondingly, revealing patterns of economic growth that have proven to be robustly evident in cross-national data (Bloom & Freeman, 1986) . Age structure is not the only influence on economic growth, but it certainly emerges as one of the most potent influences (WB, 1993) . Asia registered impressive gains during this period as measured in terms of the growth of output per worker in all sectors. At the same time, it shifted from being predominantly an agrarian region to one with rapidly expanding industrial and service sectors (Krugman, 1994) . South Asia and Southeast Asia are still primarily agricultural, although the signs of the start of their transformation into industrial and service-based economies are apparent (ADB, 1997) . The industrial sector is by far the most productive in terms of output per worker, which is likely to be due to its higher levels of capital per worker (Bloom and Freeman 1997).

Labour productivity increased sharply in Asia during 1970-90, substantially more than in Latin America and in Sub-Saharan Africa (ADB, 1997) . However, the differences across regions of Asia are significant: while labour productivity increased substantially in all major economic sectors in East and Southeast Asia, in South Asia labour productivity increased only slightly in each sector during the period (Bloom & Sachs, 1998) .

From 1970 to 1990 the labour force participation rate increased only slightly throughout Asia (WB, 1993) . The ratio of the working-age population to the total population also increased as a result of the region's demographic transition (Bloom & Sachs, 1998) . The labour force increased at a more rapid rate than the working-age population, that is, a higher share of people of working age participated in the formal labour market in 1990 than in 1970. At the same time labour productivity increased across all sectors (Bloom & Freeman, 1986) .

Demographic variables have played a large role in East Asia's economic success. Increases in life expectancy have had a large effect on incomes in East Asia. A rapid decline in fertility, induced partly by the region's economic success, led to a substantial reduction in the youth dependency ratio, thereby helping to boost growth rates of income per capita (Bloom & Canning, 1999) .

Economic growth in East Asia will likely slow in the future, because of stabilization of fertility rates at their current low levels and increases in the dependency ratio as the population ages. By contrast, Southeast Asia appears primed for an acceleration of long-run economic growth driven by increasingly favourable demographics (ADB, 1997) . The working-age share of the population (which is also reflected in the ratio of working-age to non-working-age population) is a crucial indicator of a region's or countries potential for reaping a demographic dividend (UN, 2009) .

South Asia has experienced a varying, but generally increasing, annual average growth rate in per capita gross domestic product (GDP), beginning at 1.9 per cent in 1960-70, falling to 0.6 per cent in the next decade, rising to 3.2 per cent for each of the next two decades, and climbing to 5.3 per cent since 2000. However, beginning in the 1970s, these rates are well below the corresponding figures for China (Judith, Bloom and Rosenberg, 2011). South Asia's relatively slow rate of economic growth has resulted in its GDP per capita falling progressively behind that of Brazil, China, and Indonesia (Bloom, Canning, & Rosenberg, 2010) .

The countries of the region have followed a somewhat more varied pattern, with Bangladesh and India matching the regional pattern most closely. Sri Lanka avoided the 1970s South Asian dip in economic growth rate, but now lags behind the region as a whole, with a rate of 4.0 per cent since 2000. Pakistan grew faster than the region through 1985, but has since seen slow growth (averaging 2.4 per cent since 2000). Nepal has languished during the entire period since 1960 (Bloom, Canning and Rosenberg). Historical data for Afghanistan, Bhutan, and the Maldives are spotty, but the latter two economies have done reasonably well since 2000 (Bloom, Canning, & Rosenberg, 2010) .

The correspondence between increasing GDP per capita and the rising ratio of working-age to non-working- age people is striking. For South Asia the general rising pattern of economic growth in the region since the 1960s corresponds, albeit roughly, to the increasing ratio of working-age to non-working-age people. If the correspondence between demographic opportunity and economic realization of that opportunity continues to hold, the projected rise in the ratio of working-age to non-working-age individuals suggests that South Asia will have a bright economic future (Bloom, Jeffery, & Williamson, 1998) .

Indeed, South Asia is projected to add an average of 18 million people to its working-age population every year for the next two decades—and the result will be a very high ratio of working-age to non-working-age individuals, which will peak in 2040 at 2.2:1. This ratio augurs well for future economic growth (UN, 2009) . Smaller families may cause female labour-force participation rates to rise from their currently low levels. All of this growth in the size of the labour force can impel economic growth if working-age people participate in the economic activities (Sachs, 2015) .

The availability of appropriately skilled people may not be sufficient to impel economic growth. If governments are to capitalize on the high share of working-age people in the population, they will have to ensure that those people are healthy, well educated, and well trained in the skills demanded by the labour market (UN, 2009) . Tracking such an agenda fits very well with what many governments seek to do, even in the absence of a potential demographic dividend (Sachs, 2015) . However, the dividend, which is a time-bound opportunity, may give policymakers incentive to redouble their efforts to promote the skills of the working-age cohort so that it has the ability to contribute productively to the economy (UN, 2009) .

A high share of working-age people is beneficial only if those people are employed. If they are unemployed, the outcome will likely be problematic. Labour market policies must encourage employment. Sound macroeconomic management is key. An economy that has persistently high inflation is unlikely to be able to take the best possible advantage of a large segment of working-age people (UN, 2009) .

Government institutions face a wide array of challenges. If governments are not up to the tasks they face-of providing infrastructure and other public goods and a legitimate and efficient policy environment, and addressing income and social inequality—a potential demographic dividend may be squandered (Bloom, Jefery, & William, 1998) . But full realization of the demographic dividend depends on the policies countries choose and on their political and economic relations with each other and the rest of the world (UN, 2009) .

Travel & Tourism is an important economic activity in most countries approximately the world. As well as its direct economic impact, the industry has significant indirect and induced impacts. The direct contribution of Travel & Tourism to GDP reflects the "internal" spending on Travel & Tourism (total spending within a particular country on Travel & Tourism by residents and non-residents for business and leisure purposes) as well as government "individual" spending-spending by government on Travel & Tourism services directly linked to visitors, such as cultural (e.g. museums) or recreational (e.g. national parks).

The direct contribution of Travel & Tourism to GDP is calculated to be consistent with the output, as expressed in National Accounting, of tourism-characteristic sectors such as hotels, airlines, airports, travel agents and leisure and recreation services that deal directly with tourists. The direct contribution of Travel & Tourism to GDP is calculated from total internal spending by "netting out" the purchases made by the different tourism sectors (WTTC, 2008) .

The total contribution of Travel & Tourism includes its "wider impacts" (i.e. the indirect and induced impacts) on the economy. The indirect contribution includes the GDP and jobs supported by ravel & Tourism investment spending—an important aspect of both current and future activity that includes investment activity such as the purchase of new aircraft and construction of new hotels. Another indirect contribution of tourism would be the government collective spending, which helps Travel & Tourism activity in many different ways such as tourism marketing and promotion, aviation, administration, security services, resort area security services, resort area sanitation services, etc., domestic purchases of goods and services by the sectors dealing directly with tourists- including, for example, purchases of food and cleaning services by hotels, of fuel and catering services by airlines, and IT services by travel agents (WTTC, 2008) .

The induced contribution measures the GDP and jobs supported by the spending of those who are directly or indirectly employed by the Travel & Tourism industry (WTTC, 2013) . The direct contribution of Travel & Tourism to Nepalese GDP in 2012 was NPR67.2bn (4.3 per cent of GDP). This is forecast to rise by 7.3 per cent to NPR72.2bn in 2013. This primarily reflects the economic activity generated by industries such as hotels, travel agents, airlines and other passenger transportation services (excluding commuter services). But it also includes,

for example, the activities of the restaurant and leisure industries directly supported by tourists.

The total contribution of Travel & Tourism to GDP (including wider effects from investment, the supply chain and induced income impacts, was NPR147.2bn in 2012 (9.4 per cent of GDP) and is expected to grow by 7.4 per cent to NPR158.2bn (9.80 per cent of GDP) in 2013. It is forecast to rise by 4.5 per cent pa to NPR245.6bn by 2023 (11.00 per cent of GDP). Travel & Tourism generated 553,500 jobs directly in 2012 (3.6 per cent of total employment) and this is forecast to grow by 7.0 per cent in 2013 to 592,500 (3.8 per cent of total employment) (WTTC, 2013) . This includes employment by hotels, travel agents, airlines and other passenger transportation services (excluding commuter services). It also includes, for example, the activities of the restaurant and leisure industries directly supported by tourists (WTTC, 2013) .

The total contribution of Travel & Tourism to employment (including wider effects from investment, the supply chain and induced income impacts, see page 2) was 1,255,500 jobs in 2012 (8.20 per cent of total employment). This is forecast to rise by 7.10 per cent in 2013 to 1,344,500 jobs (8.50 per cent of total employment) (WTTC, 2013) . Visitor exports are a key component of the direct contribution of Travel & Tourism. In 2012, Nepal generated NPR36.6bn in visitor exports. In 2013, this is expected to grow by 2.10 per cent, and the country is expected to attract 946,000 international tourist arrivals. Travel & Tourism is expected to have attracted capital investment of NPR12.5bn in 2012. This is expected to rise by 8.20 per cent in 2013 (WTTC, 2013) .

Leisure travel spending (inbound and domestic) generated 79.60 per cent of direct Travel & Tourism GDP in 2012 (NPR84.8bn) compared with 20.40 per cent for business travel spending (NPR21.7bn). Leisure travel spending is expected to grow by 6.60 per cent in 2013 to NPR90.4bn, and rise by 4.40 per cent pa to NPR139.1bn in 2023. Business travel spending is expected to grow by 9.30 per cent in 2013 to NPR 23.7bn (WTTC, 2013) . Domestic travel spending generated 65.70 per cent of direct Travel & Tourism GDP in 2012 compared with 34.30 per cent for visitor exports (i.e. foreign visitor spending or international tourism receipts) (WTTC, 2013) .

Most importantly, tourism is also identified as the key culturally influencing trigger to bring about social and dietary change (Lang, 1999) . Tourism encourages the transfers of tastes and preferences from developed to developing countries through tourism interventions. Tourism penetrates the cultural traditions of middle class households leading to the changes in patterns of eating and local traditions (Cwiertka & Walraven, 2002) .

6. Results

6.1. The Growth of GDP Per Capita

The national income of Nepal increased over the past four decades. The GDP[1] of Nepal has shown an annual increase at a rate of 3.90 per cent between 1970 and 2010. The population has also grown rapidly at a rate of 2.30 per cent per annum. The overall GDP per capita (at constant US $ 2005) was 145 in 1970 and increased to 269 in 2010, at an annual growth rate of 1.50 per cent.

The time series trend line of GDP per capita in constant 2005 US $ computed from least squares trend line plotting method shows that it explains the 96.37 per cent of reality (R^2 = 0.96366). The real annual rate of growth of trend line is 1.89 per cent (Figure 1). This is the trend line equation in the graph indicates that the real GDP per capita over the period of time was increased by approximately two per cent per year, but there are two distinct patterns in the periods before and after 1990. The growth rate of GDP per capita constant US $ before 1990 was slower than after 1990.

Nepal's average real GDP per capita growth of past forty years was 1.55 per cent, which is lower than India, Pakistan and Sri Lanka (Table 2), but it is higher than Bangladesh and closer to the level of Pakistan.

6.2. Economic Sectors/Structure

The three main economic sectors contributing to the GDP in Nepal are Agriculture, Industry, and Services. The Nepalese economy has traditionally been agrarian in nature. In 1970, the Agriculture sector was the highest contributor (59.50 per cent) to the economy, which dropped to 35.80 per cent in 2010. In 1970, Industry contributed only 10.10 per cent, which rose to 18.20 per cent in 2010. The highest contributor to GDP in 2010 was the Service sector, which increased from 30.20 per cent to 45.90 per cent. The Agriculture Sector (value added in constant US dollar) has expanded by annual an annual growth rate of 2.60 per cent whereas Industry and Services sectors (value added in constant US dollar) have expanded by an annual rate of 5.40 per cent and 5.00 per cent respectively.

The structure of Nepalese economy has been changing. The industry sector has grown at average annual rate of 5.40 per cent in the first position, while the services sector is also growing at average annual rate of 5.00 per cent following the industry sector in the second position. However, the agriculture sector has just grown at average annual rate of 2.60 per cent. The agriculture sector's share on GDP was 59.60 per cent in 1970 and reduced to 35.90 per cent in 2010. Similarly, the industry sector's share on GDP was 10.20 per cent in 1970 and reached at 18.20 per cent in 2010. However, the services sector's share in GDP was 30.30 per cent in 1970 and reached at 46.00 per cent in 2010.

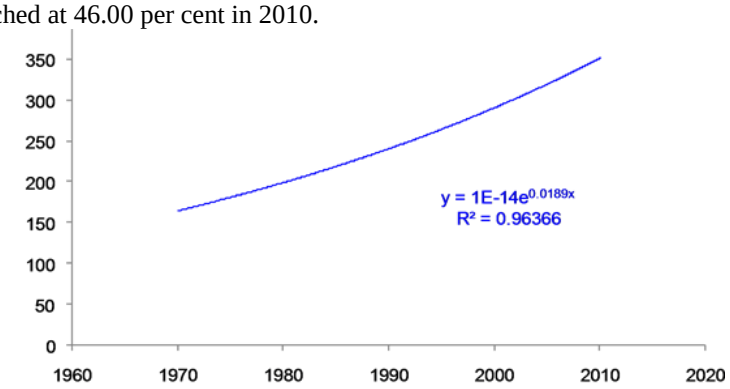

Figure 1. Trend of GDP per capita (constant 2005 US $) in Nepal.

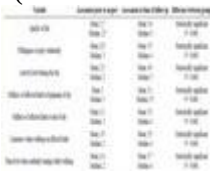

Table 2. Comparison of GDP per capita.

The time series trend line of agriculture sector value added in national income in constant US $ 2005 computed from least squares trend line plotting method show that the trend line explains approximately 98.00 per cent of reality (R^2 = 0.9763). The real annual rate of growth of agriculture sector is 2.79 per cent (Figure 2). The trend line equation in the graph indicates that the real value added of agriculture was increased by approximately 3.00 per cent per year, but there are two distinct patterns in the periods before and after 1990. The growth rate of agriculture sector before 1990 was faster than after 1990.

The time series trend line of industry sector value added in national income in constant US $ 2005 computed from least squares trend line plotting method show that the trend line explains approximately 98.00 per cent of reality (R^2 = 0.9698). The real annual rate of growth of industry sector is 6.49 per cent (Figure 2). The trend line equation in the graph indicates that the real value added of industry sector was increased by approximately 7.00 per cent per year, but there are two distinct patterns in the periods before and after 1990. The growth rate of industry sector before 1990 was slower than after 1990.

The time series trend line of services sector value added in national income in constant US $ 2005 computed from least squares trend line plotting method show that the trend line explains approximately 99.00 per cent of reality (R^2 = 0.9892). The real annual rate of growth of services sector is 4.68 per cent (Figure 2). The trend line equation in the graph indicates that the real value added of services was increased by approximately five per cent per year but there are two distinct patterns in the periods before and after 1990. The growth rate of services sector before 1990 was slower than after 1990.

6.3. Tourism Inflows and Per Capita Tourists Expenditure

The number of international tourists in Nepal has increased by an annual rate of 5.00 per cent between 1990 and 2010. But the tourism income increased by an annual rate of 3.20 per cent only. The annual growth rate of the arrival of international tourist was 4.60 per cent per year in the past forty years.

The time series trend line of tourists arrival computed from least squares trend line plotting method show that the trend line explains only 39.00 per cent of reality (R^2 = 0.3900). The real annual rate of growth of arrival of tourists is 1.5 per cent (Figure 3). The trend line equation in the graph indicates that the arrival of tourists increased by approximately 1.50 per cent per year, but there are two distinct patterns in the periods before and after 1990. The growth rate of the arrival of the tourist before 1990 was slower than after 1990. Because of the low value of R^2, the goodness fit of the trend line with the residuals seems to be weak to explain the reality.

The time series trend line of per capita tourist expenditure computed from least squares trend line plotting method shows that the trend line explains approximately 91.19 per cent of reality (R^2 = 0.9119). The real annual rate of decrease of per capita tourist expenditure is −5.77 per cent (Figure 3). The trend line equation in the graph indicates that approximately six per cent per year decreased the per capita tourist expenditure. The reason of decreasing rate of per capita tourist expenditure, even in the situation of increasing number of tourist arrival, may be either because of decreasing length of stay of the tourist or Nepal may be developed as a cheap tourists' destination.

6.4. Urbanization and Population Dynamics

The average annual growth rate of population in Nepal was 2.30 per cent for the past forty years. The average

Figure 2. Changes in the economic structure in Nepal.

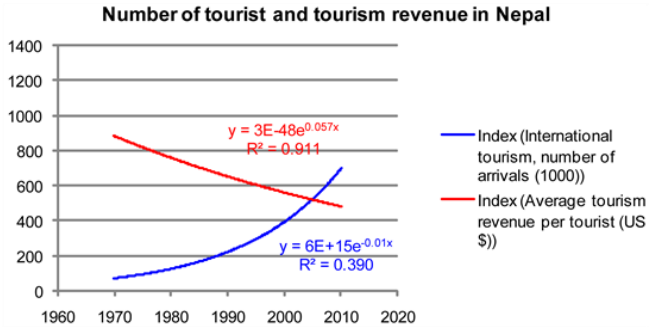

Figure 3. Tourist arrival and per capita tourism revenue in Nepal.

annual growth rate of urban population was 6.30 per cent whereas average rural population growth rate was just 1.90 per cent. The urban population in Nepal is expanded three folds in the past four decades, but the total fertility rate of rural women (4.3 births) was still quite higher than urban women (2.5 births) in 2011.

The time series trend line of total population (R^2 = 9995), rural population (R^2 = 0.9972) and urban population (R^2 = 0.9988) computed from least squares trend line plotting method show that these trend lines explains approximately 99.95 per cent of reality. The real annual rate of growth of urban population is 6.25 per cent. The trend line equation in the graph indicates that the urbanization in terms of urban population was increased by more than six per cent per year (Figure 4). The trend lines clearly indicate that the period before and after 1990 has distinctly two different patterns. The urbanization process was slower before 1990 and became faster after 1990, but the growth of total population (2.36 per cent) and rural population (1.96 per cent) are uniform through out the 40 years period.

The total labour force (in thousands) of Nepal had been double from 9376 in 1990 to 16,040 in 2010 with the average annual growth rate of 2.72 per cent. The female labour force was growing by average annual rate of 2.96 per cent, which is higher than the average male labour force growth rate.

The time series trend line of total labour force in Nepal computed from least squares trend line plotting method shows that the trend line explains approximately 99 per cent of reality (R^2 = 0.9996). The real annual rate of growth of current labour force in Nepal is 2.68 per cent. The trend line equation in the graph indicates that the labour force in Nepal was increased by approximately three per cent per year throughout the period of the past 40 years (Figure 5). There are not clear distinctions in the patterns in the trend line of labour force growth within the forty years period.

6.5. Relative Prices

Food production index is grown by annual growth rate of 3.10 per cent; and the food supply (export and import adjusted) index is grown by annual average growth rate of 1.00 per cent in the past 40 years in Nepal. The annual population growth is 2.30 per cent per year; however, the average annual growth rate of food supply is 1.00 per cent. This may indicate that there is excess demand of food commodities in Nepal over the past decades which is stimulating upward pressure to the prices and creating inflationary situation in Nepal.

The average annual increase in the relative prices of selected commodities for example buffalo meat, pig meat, soybean and mustard oils are less than the average annual rate of inflation. This indicates that real prices of plant oils and animal fats are not increased.

The time series trend line (Phillips & Perron, 1988) of the prices of mustard (R^2 = 0.6305) and soybean (R^2 = 0.7200) seeds computed from least squares trend line plotting methods

show that the trend line explains approximately 63.05 per cent to 72.00 per cent of reality. The real annual rate of growth of the price of plant sources of oils in Nepal is three per cent (Figure 6). The trend line equation in the graph indicates that the mustard and soybeans prices in Nepal were increased by approximately three per cent per cent per year throughout the period of the past 20 years. There are not clear distinctions in the patterns in the trend line of these growths within the twenty years period.

The time series trend line of the prices of buffalo (R^2 = 0.7502) and pig (R^2 = 0.6344) meats computed from least squares trend line plotting methods show that the trend line explains approximately 75.02 per cent and 63.44 per cent of reality. The real annual rate of growth of the prices of buffalo and pig meats in Nepal are 2.87

Figure 4. Urbanization and population dynamics in Nepal.

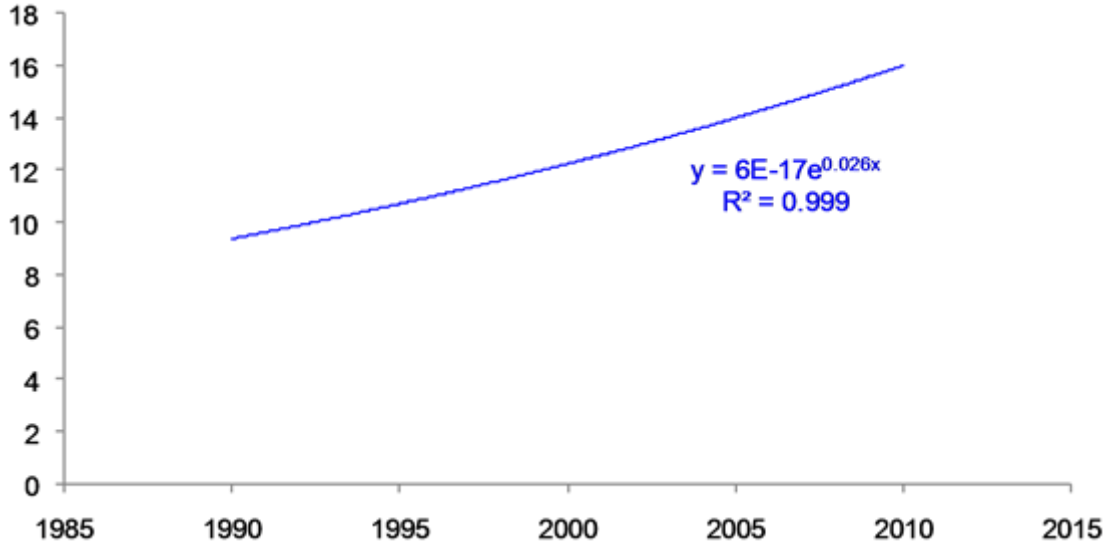

Figure 5. Current labour force, Nepal.

Figure 6. Prices of animal and plant meat/fat (US $ per metric tons).

per cent and 2.52 per cent (Figure 6). The trend line equation in the graph indicates that the mustard and soybeans prices in Nepal were increased by approximately three per cent per year throughout the period of the past 20 years. There are not clear distinctions in the patterns in the trend line of these growths within the twenty years period.

The time series trend lines also indicate that the relative prices of plant oils are cheaper than the animal sources of fats (Figure 6). So, there may be some possibilities of increased demand of plant oils because of the price effects and substitution effects in the demand among plant sources and animal sources of fats.

7. Where Is Nepal in the Economic Transition within the Nutrition Transition Framework?

The national income of Nepal increased over the past four decades. The GDP of Nepal has shown an annual increase at a rate of 3.92 per cent between 1970 and 2010. The popula-

tion has also grown rapidly at a rate of 2.33 per cent per annum. The overall GDP per capita (at constant US $ 2005) was 145 in 1970 and increased to 269 in 2010, at an annual growth rate of 1.55 per cent. The Agriculture Sector (value added in constant US dollar) has expanded by an annual growth rate of 2.61 per cent whereas Industry and Services sectors (value added in constant US dollar) have expanded by an annual rate of 5.44 per cent and 5.04 per cent respectively. Agricultural trade liberalization has induced plant fats supply and created downward pressure on plants oils. Tourism has also transferred the taste and preferences of western foods to tourist destinations and urban centres.

Nepal's position in the economic transition has been identified by using Popkin's framework which is scaled from Pattern I to Pattern V (Table 3). The time series trends indicated that new patterns of economic transition have been observed during 1995-2010, which is similar to the pattern IV of the Nutrition Transition as described by Popkin. Popkin suggests a country with economy moving away from agriculture towards industry sectors; increasing national income, participation agricultural trade liberalization and growing urbanisation are considered as Pattern IV in the economic transition.

The implications of economic transition are normally accompanied by improvements in a country's food/nu- trition supply and the gradual elimination of dietary deficiencies, thus improving the overall nutritional status of the country's population. The economic and technological developments may also bring about improved quality in the production, processing, distribution and marketing of foods including some negative health consequences related to excess consumption of fat, sugar and process foods.

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References

1. ADB (2009). Nepal: Critical Development Constraint, Country Diagnostic Studies. Manila: Asian Development Bank.

2. ADB (Asian Development Bank) (1997). Emerging Asia. Manila: ADB.

3. Bloom, D. E., & Williamson, J. G. (1998). Demographic Transition and Economic Miracles in Emerging Asia. World Bank Economic Review, 12, 419-455.http://dx.doi.org/10.1093/wber/12.3.419

4. Bloom, D. E., & Canning, D. (1999). From Demographic Lift to Economic Lift-Off: The Case of Egypt. Prospects for Egypt Conference, Cairo, Egypt, 3-4 February 1999, 12.

5. Bloom, D. E., & Sachs, J. (1998). Geography, Demography, and Economic Growth in Africa. Economic Activity, 2, 207-273. http://dx.doi.org/10.2307/2534695

6. Bloom, D. E., & Freeman, R. B. (1986). The Effects of Rapid Population Growth on Labour Supply and Employment in Developing Countries. Population and Development Review, 12, 381-414. http://dx.doi.org/10.2307/1973216

7. Bloom, D. E., Canning, D., & Rosenberg, L. (2010). Population Aging and Economic Growth in South Asia. Harvard Program on the Global Demography of Aging, Working Paper No. 67

8. Cwiertka, K., & Walraven, B. (2002). Asian Food: The Global and the Local. Richmond, VA: Curzon Press Ltd.

9. FAO (Food and Agricultural Organization) (2010). Economic Growth Hunger and Malnutrition. The State of Food Security in the World, Rome: FAO Press.

10. Judith, B., Bloom, D. E., & Rosenberg, L. (2011). Population Aging and Economic Growth in China. PGDA Working Paper No. 53.http://www.hsph.harvard.edu/pgda/working.htm

11. Krugman, P. (1994). The Myth of Asia's Miracle. Foreign Affairs, 73, 62-78.http://dx.doi.org/10.2307/20046929

12. Lang, T. (1999). Diet, Health and Globalization: Five Key Questions. Proceedings of the Nutrition Society, 58, 335-343. http://dx.doi.org/10.1017/S0029665199000452

13. NPC/N (National Planning Commission) (2010). Five Year Plan. Nepal, Kathmandu: NPC.

14. Popkin, B. M. (1993). Nutrition Patterns and Transitions. Population and Development Review, 19, 138-157. http://dx.doi.org/10.2307/2938388

15. Popkin, B. M. (2001). Nutrition in Transition: The Changing Global Nutrition Challenge. Asia Pacific Journal of Clinical Nutrition, 10, S13-S18. http://dx.doi.org/10.1046/j.1440-6047.2001.0100s1S13.x

16. Pyakuryal, B., Thapa, Y. B., & Roy, D. (2005). Trade Liberalization and Food Security in Nepal. International Food Policy Research Institute, MTID Discussion Paper No. 8.http://www.ifpri.org/sites/default/files/publications/mtidp88.pdf

17. Phillips, P., & Perron, P. (1988). Testing for a Unit Root in Time Series Regression. Biometrica, 75, 335-346. http://dx.doi.org/10.1093/biomet/75.2.335

18. Sachs, J. (2015). The Age of Sustainable Development. New York: Columbia University Press.

19. UN (United Nations) (2009). World Population Prospects. The 2008 Revision, UN.

20. WB (World Bank) (1993). The East Asian Miracle: Economic Growth and Public Policy. New York: Oxford University Press.

21. World Bank (2000). Nepal Country Overview. http://www.worldbank.org

22. WTTC (World Travel and Tourism Council) (2008). Tourism Satellite Account: Recommended Methodological Framework. London: WTTC.

23. WTTC (World Travel and Tourism Council) (2013). Travel and Truism: Economic Impact, Nepal. London: WTTC.

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BOOKS
One author
Pollan, Michael. 2006. The Omnivore's Dilemma: The Natural History of the Four Meals. New York: Penguin. (Pollan 2006, 99-100).
Fanon, Franz. 2008. Black leather, white masks. Per. Richard Philcox. New York: Grove Press. (Fanon 2008, 33-34).

Multiple Authors
Ward, Jeffrey S. - Ken Burns. 2007. War: An Intimate History, 1941-1945. New York: Knopf. (Ward - Burns 2007, 52)

Edited books
Puherova, Kindness - Robert Gafrik, ed. 2015. Postcolonial Europe? Essays on Post-Communist Literature and Cultures. Leiden - Boston: Brill. (Puherova - Gafrik, 4-5)

Chapter of a book or other part of a book
Kelly, John D. 2010. Seeing Red: Mao's Fetishism, Pax Americana, and the Moral Economy of War. In Anthropology and Global Counterinsurgency, ed. John D. Kelly - Beatrice Choreghie - Sean T. Mitchell - Jeremy Walton, 67–83. Chicago: University of Chicago Press. (Kelly 2010, 77)

JOURNAL ARTICLES
Weinstein, Joshua I. 2009. "The Marketplace in Plato's Republic." Classical Philology 104: 439–458. (Weinstein 2009, 440)
Haft, Adele J. 1984. Odysseus, Idomeneo and Merion: The Cretan Lies of the Odyssey 13-19. Classic Journal 79, 4: 289-306. (Haft 1984, 302)

PUBLICATIONS ON THE INTERNET
Kosinets, Georgi - Duncan J. Watts. 2009. "The Origins of Homophilia in the Emerging Social Network." American Journal of Sociology 115: 405-50. As of February 28, 2010 doi: 10.1086 / 599247. (Kosinets - Watts 2009, 411)