# Total Economic Impact of Tourism on Rwanda's Economy and Its Linkages with Other Sectors of the Economy

**Abstract**
Measurement of tourism economic impacts is important in monitoring progress towards meeting planned socio-economic goals. However, there has been insufficient attention to rigorous analysis of ramifications of tourism beyond accounting for initial impacts. Labour income, output and value added multipliers indicate that tourism has strong linkages with service sectors while employment multiplier indicates robust linkages with agriculture. The current study aimed to evaluate the economic impacts of tourism on Rwanda's economy. Results indicate that internal tourism demand created 29% of all jobs, generated 9.7% of labour incomes, 11.1% of total value addition and 12% of national output in 2014. Therefore, increasing internal tourism demand in Rwanda will lead to higher labour income, increased output and value addition and higher employment in agriculture and other associated sectors. This study shed lights on predominantly informal sector of Rwanda's economy especially with respect to the domestic tourism market.
*Keywords: input-output analysis, social accounting matrix (SAM), multiplier effects, total tourism internal demand, Rwanda*

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## 1. Introduction

Tourism's global economic foot print is well recognized; by 2016, receipts from international travel contributed 10.2% of global gross domestic product (GDP), 9.6 of formal jobs and 7% of global trade (World Travel and Tourism Council, WTTC, 2017; United Nations World Tourism Organization, UNWTO, 2017). In 2016, Africa received 4.7% share of international tourist arrivals. However, this represented a significant 8% growth from 2015 (compared to the global 3.9 increase). Africa's 2016 international tourism earnings were at $32.8 billion, representing 2.7% of global tourism receipts (UNWTO, 2018). Going by United Nations World Tourism Organization (UNWTO) forecasts, by 2030 international tourism arrivals in Africa are expected to reach 134 million representing 7.4% of the market (UNWTO, 2017). Tourism is expected to drive the service sector in African economies which is rapidly taking over from agriculture. The industry is gaining against Africa's predominantly agro-processing manufacturing sector on account of high production costs and stringent trading conditions that make Africa's manufactured exports globally non-competitive.

Tourism is expected to support economic diversification and drive social-economic development goals (Valle & Yobesia, 2009). Countries in Sub-Saharan Africa, consider tourism a viable export on account of the destinations' competitive pristine natural attractions, rich cultural and historical heritage. This advantage is projected to sustain tourism's growth; for instance, in the East African sub-region, Rwanda's inbound tourist arrivals grew at an average 7%, three percentage points above the African average in the period between 2012 and 2015 (UNWTO, 2016). According to the Rwanda national tourism policy, the country projects to grow international tourist arrivals to 2.2 million visitors in 2020 from 1.2 million in 2014. This is expected to earn Rwanda $627 million in revenues (Ministry of Trade and Industry, 2009). Under Rwanda's *Vision 2020* and the Economic Development and Poverty Reduction Strategy (EDPRS II), tourism is anticipated to contribute to increased government revenues, better balance of payments and a sustained economic growth with equitable distribution of benefits to all Rwandan nationals. In addition to generating foreign exchange earnings and creating jobs for the economy, tourism is projected to promote trade, investment and significantly spur development of other sectors of the economy.

Accurate measurement of tourism economic impacts is important in tracking progress towards attaining assigned socio-economic goals. The outcome of such an assessment is relevant in establishing tourism's economic profile and justifying public investment in tourism in a developing country such as Rwanda where resource opportunity costs are high (Smeral, 2011). Economic impacts studies serve as tools for guiding policy design, decision making and management by a wide spectrum of stakeholders (Fretchling and Smeral, 2010; Frechtling, 2013; Wei et al., 2013).

Most developing countries have a time lag of three to five years in the preparation of their Supply and Use Tables (SUT), Input-Output Table (I-O) and Social Accounting Matrices (SAMS). Due to these delays, the current study evaluated the economic impacts of tourism on Rwanda's economy for the year 2014. The study relied on multipliers and internal tourism demand data from tourism satellite account (TSA) to estimate the impacts.

The next section describes the economy of Rwanda and the country's tourism industry. The subsequent section reviews literature on tourism economic impact analysis before presenting a review of recent selected tourism empirical studies. Data used and methodology applied in estimation of multipliers and computation of impacts are then presented.

## 2. Literature Review

### 2.1 The Economy of Rwanda

Rwanda is a member of the East African Community (EAC), a regional economic block whose membership includes Kenya, Uganda, Tanzania, Burundi and Southern Sudan.

Agriculture is a key sector of Rwanda's economy and contributed an average 33 % of GDP between 2009 and 2014, employed 71% of the population and generated 45% of the country's export revenues. The main crops are coffee and tea (NISR, 2016; World Bank. 2011). The country's manufacturing sector contributed 15% of GDP annually between 2009 and 2014. In the last decade, service was the most dynamic sector in Rwanda, as such; the country is favourably competing as a services hub in the EAC region (Uwitonze & Heshmati, 2016). The service sector is sub-divided into trade and services which on average contribute 32% of GDP. In 2014, Rwanda's GDP was estimated at RWF 5,395 billion translating to GDP per capita of RWF 491,000.

## 2.2 Rwanda's Tourism Industry

By 2011, tourism industry was contributing 63% of the country's service export earnings and boosting balance of payments. The growing sector ranks highly in Foreign Direct Investment (FDI) attraction accounting for up to 40% of total FDI into the country (United Nations, 2014). Table 1 summarizes international tourist arrival in Rwanda between 2011 and 2014 by regions and shows an aggregate 9.3% growth trend over the period with visitors from Africa forming 85-89% of inbound tourists on account of improved intra-regional accessibility. Conversely, poor connectivity with major international capitals explains lower arrivals from European, American and Pacific regions over the period (UNWTO, 2016). In 2014, Rwanda's international inbound tourism arrivals were at 1,219,529 visitors who each spent an average 6.5 nights in the country. Only 22% of the country's citizen population participated in domestic tourism activities in 2014 (Rwanda Tourism Satellite Account, RTSA 2014).

**Table 1:** International regional inbound tourists arrivals.

| Regional ITA ('000) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Year | Africa | Americas | E. Asia & Pacific | Europe | Middle East | Others* | Total |
| 2011 | 774 | 38 | 13 | 67 | 2 | 14 | 908 |
| 2012 | 936 | 33 | 12 | 62 | 2 | 16 | 1,061 |
| 2013 | 988 | 38 | 15 | 61 | 3 | 17 | 1,122 |
| 2014 | 1,088 | 35 | 12 | 61 | 3 | 21 | 1,220 |

*Others include arrivals from South Asia and other non-classified markets
*Source:* RTSA, 2014; UNWTO, 2016.

Rwanda is reliant on wildlife based tourism for 90% of its tourism generated revenues (MoTI, 2009). The principle wildlife attractions are Volcanoes National Park which offers opportunity for gorilla tracking, Nyungwe tropical forest, the largest remaining track of mountain forest in East and Central Africa and Akagera National Park which offers a typical Savanna experience.

## 2.3 Tourism Economic Impact Analysis

The relevance of tourism as a socio-economic growth and development tool has continued to motivate scholarly attention to its economic impacts assessment. Briassoulis (1991) point out that rigorous study of economic impacts is necessitated by the truism that tourism bears economic costs that discount its realized benefits. Real tourism benefits are often at variance with what is envisaged in development policy blue prints, thus economic impact studies are necessary as a policy monitoring and evaluation tool.

A range of alternative approaches for assessing tourism economic impacts have been developed (Stynes, 1999). Methods include expert judgment, surveys, off-the-shelf multipliers and econometric models. Kumar and Hussain (2014) explain that the decision on multiplier methods and models to use is based on precision expected, data availability, complexity of technique and assumptions underpinning the analysis.

Multiplier studies posit that a shock introduced by tourism expenditure leads to additional activities in related industries which magnify the overall change from the initial shock. Input-Output (I-O) analysis and Social Accounting Matrix (SAM) are two techniques that have been widely applied in deriving multipliers. The techniques are used to analyze direct, indirect and induced impacts, simulate *ex ante* or *ex post* effect of tourism demand at national, sub-national, industry or sub-sector levels (Dwyer et al., 2004; Frechtling, 2013). Other methods used to study economic impacts include General Equilibrium Modeling (GEM).

Frechtling and Horváth (1999) estimates economy wide output, labour income, employment and value added multipliers. Output is defined as the value of production; labour income consists of employee compensation and proprietor incomes while value added is taken as labour incomes, property incomes and indirect business taxes. To account for seasonality, employment is defined as full-time annual average jobs for employed and self-employed workers. Measures of direct, indirect and induced effects of a unit of final demand are derived.

Tourism economic impacts are triggered by an initial shock due to a change in final tourism demand (Frechtling & Horváth, 1999; Miller & Blair, 2009). The analysis breaks down the final tourism demand vector, that is, total tourism internal demand (TTID) into its components; ITC, TGFCF and TCC. The components are further disaggregated into tourism characteristics products and tourism specific assets in order to march demand with supplying industries. Appropriate industry multipliers are then applied on tourism visitor final demand for each characteristic tourism commodity and asset to compute impact estimates at the three levels of TTID aggregation.

The study relies on the Impact Analysis for Planning (IMPLAN) software to evaluate tourism economic impact. Developed by USDA forest service in 1979, the software is widely used to quantify effects of changes in production and to demonstrate the importance of a given industry in an economy.

## 3. Methodology

The economic impacts of tourism can be estimated using economic models that identify and quantify the linkages between different sectors of the economy (Dwyer et al., 2004; Hara, 2008; Stynes, 1999). The relationship between expenditure and output, and income and employment can be described by multiplier effects (Frechtling & Horvath, 1999). The standard approach is to estimate the economic impacts of tourism by using impact models in order to derive appropriate multipliers.

Tourism Satellite Accounts (TSAs) provide input data for entry into an economy's input-output model (Hara, 2012). TSAs are constructed to aggregate a country's tourism activities into a single industry. The ten TSA tables are built according to the National Accounting System (NAS). The aggregated tourism industry is inserted as one explicit industry in the I-O table, thus avoiding double counting. Data from Rwanda TSA (2014), surveys by NISR and BNR was used to estimate the macroeconomic and inter-industry linkages of the tourism sector. TSA is used in compiling the intermediate and final consumption (demand) vector based on tourism expenditure.

SAM methodology focuses on induced effects besides the direct and indirect ones, giving it certain advantages over the I-O modelling methodology (Briassoulis, 1991; Miler & Blair, 2009; Surugiu, 2013). SAM describes the structure of an economy in terms of links between

production, income distribution and demand. However, SAM is a demand-driven model with an excess capacity assumption. The model assumes that any increase in demand is immediately met by increased supply due to availability of unemployed resources. Such models are robust for economies with high unemployment and unused capacity in all industries. SAM capturing an economy's expenditure and income linkages is derived by modifying the appropriate I-O table. SAM square matrix records flows of all transactions in an economy and provides an accounting system of an economy for a given year. Besides I-O and TSA tables, public sector accounts, national income accounts and balance of payments are used to construct SAM.

The following mathematical input-output model is usually taken as the starting point for the impact models:

$$X = A \times X + F - M \qquad\qquad \text{Equation (1)}$$

Where:

X is vector of total gross output from industry $_{f-1}$ to industry $_{f-n}$;

A is input coefficient matrix from industry $_{f-1}$ to industry $_{f-n}$;

F is a vector of final demand from industry $_{f-1}$ to industry $_{f-n}$;

M is a vector of import from industry $_{f-1}$ to industry $_{f-n}$.

In order to extract the invert matrix or the Leontief inverse (which is a multiplier explaining direct, indirect and induced effects), all elements from equation (1) are transposed to X as follows:

$$(1 - A)X = F - M \qquad\qquad \text{Equation (2)}$$
$$X = (1 - A)^{-1}(F - M) \qquad\qquad \text{Equation (3)}$$

Where $(1 - A)^{-1}$ is the inverse matrix.

This yields four different sets of multipliers; total industry output, labour income, value added, and employment. Each set of multipliers creates four types of multipliers i.e. Type 1, Type 2, Type 3, and Type 4 within the IMPLAN system. A Type 1 multiplier shows the direct effect plus the indirect effect. A Type 4 (Type SAM) multiplier gives the Type 1 plus induced effect (includes social security and income tax leakage, institution savings, commuting, and inter-institutional transfers). Type 1 and Type SAM multiplies express an open and closed model of the input-output analysis, respectively. A closed model (Type SAM multiplier) refers to a case where households are included in the input-output analysis. When exclusive of households, the model becomes open (Type 1 multiplier). This paper is based on Type 4 (Type SAM) multipliers.

Atan and Arslanturk (2012) used I-O analysis to examine significance of tourism in the Turkish economy to uncover the link between tourism and economic growth. The study computes total output multipliers for 16 sectors of the Turkish economy to assess the relative significance of tourism in increasing output. Results reveal that tourism specific sectors; hotels and restaurants, auxiliary transport activities and travel agency activities have high output multipliers or backward linkages (between 1.85 and 1.90). It was further noted that hotels and restaurants sector (1.90) was second to manufacturing (2.02) in terms of total output multiplier. The researchers are able to assert that tourism has a high capacity to grow other sectors of the economy on account of the high quantity of input from other sectors required to generate a unit in the tourism sector.

Michálková et al. (2018) applied the I-O model to quantify direct and secondary economic benefits of a cultural event in Bratislava, Slovakia. The study borrows multipliers previously calculated from Slovakian I-O table and applies them on aggregated tourism expenditures obtained from survey data. The authors were able to estimate total economic contribution generated by final tourism consumption during the coronation event held in Bratislava. Ivandić and Šutalo (2018) used data from Croatian TSA and I-O tables to estimate tourism's contribution to GDP and measure multiplicative effects of tourism demand on the economy.

Specifically, the study set out to evaluate impacts of a tourism boom on structural changes in the economy comparing 3 periods between 2005 and 2013. It applied a vector column of internally produced domestic tourism consumption on the Leontief inverse matrix to compute output and gross value added (GVA) multipliers for seven tourism related sectors. Results reveal marked volatility in output multipliers in the 3 periods but show "air transport" to have the largest backward influence (output multiplier = 2.08) on the economy. The findings indicate that "hotels and restaurant" sector had the lowest share of intermediaries in total output implying that the sector draws weakly from others slowing down potential overall growth. The study observes volatility in GVA multipliers similar to output multipliers. However, they show that "hotels and restaurants" had the highest total GVA multipliers in all the periods allowing the conclusion that tourism demand gainfully impacted on other non-tourism sectors of the economy due to overall inter-sector connections.

## 4. Results

Two inputs are required to assess economic impacts of tourism expenditure; a set of multipliers corresponding to tourism specific industries and a measure of tourism demand changes appropriately disaggregated and matched with corresponding industries (Frechtling & Horváth, 1999). These inputs were obtained from the following data sources.

### 4.1 Rwanda's Input-Output Tables 2014

The study relies on Rwanda I-O tables 2014 (RI-O, 2014), the latest complete account of inter-industry transactions and final demand produced for Rwanda to derive an I-O model. This is a database of high resolution multi-region I-O tables (MRIO) for 190 countries including Rwanda. The first quadrant/intermediate usage sub-matrix or transaction tables of the Rwandese I-O tables, 2014 records flows between twenty six (26) industries. Food & beverages, hotels & restaurants, retail trade and transport are industries that relate to tourism in the sub-matrix. The second quadrant shows output disposition to final demand categories which include household (96%), state and local government (14%), capital formation (41%), institutional sales (-29%) and net exports (-25%). The sum of row totals of this sub-matrix gives total final demand at $5.378 billion in 2014. The third quadrant is made up of primary inputs to production by the 26 industries and includes returns to the inputs such as compensation to employees, gross operating surplus, gross mixed incomes, imports and net taxes on production. The column total of row sums of this sub-matrix computes total value added at $5.57 billion in 2014. The final quadrant shows all primary inputs into final demand by household, government, investment and exports.

### 4.2 Rwanda Tourism Satellite Account

The second set of data is obtained from Rwanda Tourism Satellite Accounts year 2014 (R-TSA, 2014) constructed in line with the Tourism Satellite Account Recommended Methodological Framework (TSA: RMF 2008) of UNWTO. In the TSA framework, "tourism industry" is identified from the demand side by commodities that serve tourists' needs and linked to the supply side with tourism specific industries supplying such commodities. The R-TSA 2014 is used in compiling the final consumption (demand) vector based on total internal tourism demand (TITD). Internal tourism demand is resolved into internal tourism consumption (ITC), tourism gross fixed capital formation (TGFCF) and tourism collective consumption (TCC). R-TSA, 2014 identifies five (5) tourism characteristic commodities *viz*, food and drinks, accommodation, local tour packages, day tours/excursions and local transport that account for 81% of total internal tourism consumption while shopping accounts for 13%.

On the other hand, accommodation, food and drinks, passenger transport account for 99% of investments by the tourism industry. About 98% of Government tourism investment was directed at tourism transport and infrastructure development and 2% towards hospitality. RTSA, 2014 indicate that in 2014, $12 million was spent by government on various tourism industry support and administrative services. This section presents computed economy wide output, labour income, employment and value added multipliers and economic impacts of demand in tour ism specific industries for the economy in 2014.

### 4.3 Multipliers

Table 2 presents direct, indirect, induced and total employment, labour income, value added and output multipliers for tourism related sectors. Total multiplier rankings for the fours sector are indicated in parenthesis.

**Table 2:** Direct, indirect and induced tourism industry multipliers.

| Sector | Effect | Impact Output | Labour Income | Employment | Value Added |
|---|---|---|---|---|---|
| Hotel & Restaurants | Direct Effect | 1 | 0.266355 | 78 | 0.392161 |
| | Indirect Effect | 0.939257 | 0.172155 | 1,912 | 0.452808 |
| | Induced Effects | 0.941777 | 0.247364 | 530 | 0.477145 |
| | **Total** | **2.881034{8}** | **0.685874{13}** | **2,520{9}** | **1.322114{23}** |
| Food &Beverage | Direct Effect | 1 | 0.070401 | 22 | 0.143815 |
| | Indirect Effect | 1.110533 | 0.218322 | 5,261 | 0.727579 |
| | Induced Effects | 0.686983 | 0.180442 | 387 | 0.348064 |
| | **Total** | **2.797516{16}** | **0.469165{24}** | **5,670{4}** | **1.219458{9}** |
| Transport | Direct Effect | 1 | 0.234046 | 243 | 0.345873 |
| | Indirect Effect | 0.568260 | 0.122059 | 112 | 0.264563 |
| | Induced Effects | 1.282701 | 0.336913 | 722 | 0.649887 |
| | **Total** | **2.850961{11}** | **0.693018{10}** | **1,077{16}** | **1.260323{14}** |
| Retail Trade | Direct Effect | 1 | 0.392164 | 444 | 0.581724 |
| | Indirect Effect | 0.562007 | 0.130466 | 272 | 0.287451 |
| | Induced Effects | 1.089509 | 0.286168 | 613 | 0.552003 |
| | **Total** | **2.651516{18}** | **0.808798{7}** | **1,329{12}** | **1.421178{21}** |

*Source*: IMPLAN Output.

*Output:* For every $1 spent in the industry, the direct effect is $1 for all sub-sectors. Domestic inter-business purchases per $ of output varied across tourism sub-sectors; food & beverage generated $ 1.1/$1 of output, hotels and restaurants $0.9, transport $0.6 and retail trade $0.6 per dollar of output. Considering induced output, food and beverage generated $0.7 per $1, hotel and restaurants $0.9, transport $1.3 and retail trade $1.1. Simple total output multipliers ranged from 2.9 for hotels and restaurant sub-sector down to 2.7 for retail trade.

*Employment:* Food and beverage sub-sector recorded the highest employment generation effect for every $1 million worth of extra production. This was 5,670 full time equivalent jobs and ranked 4th in the economy. At the same level of production the transport sub-sector generated 1,078 jobs, retail trade 1,329 jobs and hotel and restaurant 2,520 jobs.

*Labour Income:* One million dollar worth of production spurred extra $469,165 labour income in the food and beverage sub-sector, $685,874 for hotel and restaurant, $693,015 for transport and $808,798 for retail trade sub-sector.

*Value Addition:* One million worth of production created extra value of $1,219,458 in the food and beverage sub-sector, $1,322,114 for hotel and restaurant, $1,260,323 for transport and $1,421,178 for the retail trade sub-sector.

### 4.4 Tourism Economic Impacts

Total tourism internal demand (TTID) extracted from R-TSA, 2014 was resolved into ITC, TGFCF and TCC. Internal tourism consumption (ITC) was decomposed into accommodation ($124 million), food and drinks ($54 million), passenger transport ($35 million), travel agency /tour operations ($4 million) and shopping ($71 million). These expenditure items were analysed under the economy's hotels and restaurant, food and beverage, transport and retail trade sectors accordingly.

Table 3 summarizes effects of visitor acquisition due to expenditure on various tourism characteristics products based on the derived multipliers (Table 2). Accommodation is estimated to have supported 298 thousand full time jobs and generated $84 million as labour income, $163 million in value addition and $353 million as output due to $124 million tourism spending. Under employment creation, accommodation is significantly linked to agriculture and fishing where it supported about 268 thousand jobs. The sector is also strongly linked to financial intermediation/business activities where it resulted in $14.5 million as labour incomes, $38 million value addition and supported $63 million worth of output.

**Table 3:** Indicators of impacts of tourism expenditure ($) in Rwanda, 2014.

| | | Tourism Expenditure | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| | | Accommodation | Food & Drinks | Passenger Transport | Travel Agencies and Tour Operators | Shopping and Other Expenses |
| **Employment** | Direct | 9, 227 | 1,125 | 8,294 | 967 | 31,152 |
| | Indirect | 226,394 | 268,588 | 3,814 | 444 | 19,123 |
| | Induced | 62,772 | 19,747 | 24,602 | 2,867 | 43,057 |
| | Total | **298,393** | **289,461** | **36,710** | **4,278** | **93,332** |
| **Labour Income** | Direct | 32,751, 790 | 3,732,906 | 8,280,379 | 965,007 | 28,589,182 |
| | Indirect | 21,168,706 | 11,576,146 | 4,318,360 | 503,268 | 9,511,111 |
| | Induced | 30,416,588 | 9,567,640 | 11,919,732 | 1,389,141 | 20,861,994 |
| | Total | **84,337, 084** | **24,876, 692** | **24,518, 472** | **2,857,416** | **58,962,287** |
| **Total Value Added** | Direct | 48, 221, 296 | 7,625,564 | 12,236,761 | 1,426,088 | 42,408,300 |
| | Indirect | 55, 678, 634 | 38,578, 658 | 9,360,071 | 1,090,835 | 20,955,463 |
| | Induced | 58,671,289 | 18,455,483 | 22,992,550 | 2,679,583 | 40,241,589 |
| | Total | **162,571,219** | **64,659,705** | **44,589,382** | **5,196,507** | **103,605,352** |
| **Output** | Direct | 123,599,999 | 53,733,333 | 33,466,667 | 4,133,333 | 71,466,664 |
| | Indirect | 114,843,291 | 57,684,622 | 20,034,833 | 2,334,886 | 40,721,915 |
| | Induced | 115,048,607 | 36,188,569 | 45,085,104 | 5,254,279 | 78,908,436 |
| | Total | **353, 491, 897** | **147,606,524** | **100,586,605** | **11,722,498** | **191,097,015** |

*Source*: IMPLAN Output

Food and Drinks (F&D) sector supported about 289 thousand jobs from demand worth $54 million, generated $25 million as labour income, $65million as value addition and $148 million as output. The sector demonstrated strong interdependence with agriculture in terms of employment creation as can be inferred from the 254 thousand jobs supported. The sector has strong linkages with agriculture and financial intermediation/business activities in terms of labour income generation, value addition and output generation. Up to 64% of total value addition, 46% of resultant labour incomes and 36% of total output generated in the sector was attributable to agriculture and financial/business activities.

In 2014, $35 million was spent by visitors in the transport sector as passenger transport. This expenditure supported 37,000 jobs, generated $25 million as labour income, $45 million in value addition and $101 million worth of output. At the same time, the $4 million tourism expenditure in the transport sector for payment of travel agency and tour operations services supported 4 thousand jobs and generated $3 million as labour income, $5 million in value addition and $12 million as output. The transport sector was strongly linked to agriculture in terms of employment generation and to the financial intermediation and business activities sector in terms of labour income creation. Almost 21% of all income, 31% of value addition and 23% of output was generated from direct tourist expenditure in the transport sector.

Shopping activities supported 93,000 jobs and generated $59 million as labour income, $104 million in value addition and $191 million as output due to $ 71 million spending in the retail sector.

Tourism gross fixed capital formation (TGFCF) was considered as the total value of a producer's acquisition less disposals of fixed assets in 2014. Estimation of TGFCF entailed capturing tourism driven investment in tourism specific fixed assets, non-tourism-specific assets and tourism related infrastructure. On the other hand, tourism collective consumption (TCC) focused on public sector expenditures on administration of tourism activities.

Private sector TGFCF in 2014 was estimated at $303 million invested in various tourism specific sectors while public sector invested $12 million. Governments invested $12 million as tourism collective consumption. Table 4 summarizes the sectorial economic impacts resulting from tourism investment and collective consumption in the economy of Rwanda, 2014.

About $30 million direct private investment in the accommodation sector created 72,000 jobs and generated $20 million in labour incomes, $39 million in total value addition and $86 million in output. On the other hand, $139 million directly invested in the food and drinks sector created 748,000 jobs, generated $64 million as labour income, $167 million in value addition and $381 million in output. The 1.2 million dollars investment in passenger transport created 1.2 thousand jobs, yielded $830 thousand in labour income, $1.5 million on value addition and $ 3.4 million in output. About $133,000 invested in tour operations created 138 jobs, $92 thousand as labour incomes, $198 thousand in value addition and $378 thousand in output. The $12 million public investment in tourism generated 14,000 jobs in the economy, earning households $10 million in labour incomes and contributed $16.8 to total value addition and $33 million worth of output.

**Table 4:** Indicators of impacts of tourism investment and collective consumption in Rwanda, 2014 .

| | | Tourism Private  GFCF | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| | | Accommodation | Food & Drinks | Passenger Transport | Travel Agencies | Tourism Public GFCF | Tourism Collective Consumption |
| **Employment** | Direct | 2,240 | 2,908 | 281 | 31 | 3,828 | 73,860 |
| | Indirect | 54,950 | 693,796 | 129 | 14 | 2,619 | 1,327 |
| | Induced | 15,236 | 51,010 | 832 | 93 | 7,671 | 3,852 |
| | **Total** | **72,425** | **747,714** | **1,242** | **138** | **14,118** | **79,040** |
| **Income** | Direct | 7,949,464 | 9,642,568 | 280,163 | 31,129 | 4,837,276 | 1,161,636 |
| **Labour** | Indirect | 5,138,035 | 29,902,651 | 146,110 | 16,234 | 1,437,767 | 1,668,066 |
| | Induced | 7,382,667 | 24,714,425 | 403,299 | 44,811 | 3,716,478 | 1,866,697 |
| | **Total** | **20,470,166** | **64,259,643** | **829,572** | **92,174** | **9,991,522** | **4,696,398** |
| **Value** | Direct | 11,704,198 | 19,697,797 | 414,026 | 46,003 | 6,552,778 | 4,041,498 |
| **Added** | Indirect | 13,514,232 | 99,653,555 | 316,694 | 35,188 | 3,051,311 | 3,504,702 |
| | Induced | 14,240,604 | 47,672,849 | 777,943 | 86,438 | 7,168,908 | 3,600,724 |
| | **Total** | **39,459,033** | **167,024,201** | **1,508,663** | **167,629** | **16,772,997** | **11,146,925** |
| **Output** | Direct | 30,000,000 | 138,800,001 | 1,200,000 | 133,333 | 11,733,333 | 9,148,058 |
| | Indirect | 27,874,585 | 149,006,678 | 677,870 | 75,319 | 6,583,830 | 6,628,140 |
| | Induced | 27,924,419 | 93,479,654 | 1,525,435 | 169,492 | 14,057,160 | 7,060,636 |
| | **Total** | **85,799,004** | **381,286,333** | **3,403,305** | **378,144** | **32,374,323** | **22,836,834** |

*Source*: IMPLAN Output.

About \$9 million direct tourism collective consumption created 79,000 jobs and generated \$5 million in labor income, \$11 million in total value addition and \$22 million in output. The total economic impact of tourism was computed at 3 successive levels of aggregation of total tourism internal demand components. Table 5 presents results of this analysis: With a total internal tourism expenditure of \$286 million, the tourism sector supported about 722 jobs or 13% of all jobs in the economy and generated \$195 million as labour incomes (6.4% of national labour income), \$381 million in value addition (6.8% of national value added) and \$803 million (% output).

Considering internal tourism expenditure and total investment, the total expenditure of \$468 million in tourism supported 28% of all jobs in the economy, generated 9.5% of national income, contributed to 10.9% of national value added and made up 11.8% of national output. At the third level where collective consumption was added, the total internal tourism demand of \$477 million enabled the tourism sector to support 1.64 million jobs or 29% of all jobs in the economy, generate \$295 million labour incomes (9.7%), \$617 million in value addition (11.1%) and \$1.3 billion of output or 12% of national output.

**Table 5:** Impacts of total tourism internal demand in Rwanda, 2014.

| | | LEVEL 1 (Tourism Consumption) | Tourism Investment | LEVEL 2 ( Tourism Consumption + Tourism Investment) | Tourism Collective Consumption | LEVEL 3 ( Tourism Consumption + Tourism Investment + Tourism Collective Consumption) |
|---|---|---|---|---|---|---|
| **Employment** | **Direct** | 50,765 | 9,288 | 60,053 | 73,860 | 133,913 |
| | **Indirect** | 518,363 | 751,508 | 1,269,871 | 1,327 | 1,271,198 |
| | **Induced** | 153,045 | 74,842 | 227,887 | 3,852 | 231,739 |
| | **Total** | **5,560,000** | **722,174 (13%)** | **835,637** | **1,557,811 (28%)** | **79,040** | **1,636,851(29.4)** |
| **Labour Income** | **Direct** | 74,319,264 | 22,740,600 | 97,059,864 | 1,161,636 | 98,221,500 |
| | **Indirect** | 47,077,591 | 36,640,797 | 83,718,388 | 1,668,066 | 85,386,454 |
| | **Induced** | 74,155,095 | 36,261,680 | 110,416,775 | 1,866,697 | 112,283,472 |
| | **Total** | **3,043,512,934** | **194,551,951 (6.4%)** | **95,643,077** | **290,195,028 (9.5%)** | **4,696, 398** | **294,891,426 (9.7)** |
| **Total Value Added** | **Direct** | 111,918,009 | 38,414,802 | 150,332,811 | 4,041,498 | 154,374,309 |
| | **Indirect** | 125,663,661 | 116,570,980 | 242,234,641 | 3,504,702 | 245,739,343 |
| | **Induced** | 143,040,494 | 69,946,742 | 212,987,236 | 3,600,724 | 216,587,960 |
| | **Total** | **5,569,868,114** | **380,622,165 (6.8%)** | **224,932,523** | **605,554,688 (10.9%)** | **11,146, 925** | **616,701,613(11.1)** |
| **Output** | **Direct** | 286,399,996 | 181,866,667 | 468,266,663 | 9,148,058 | 477,414,721 |
| | **Indirect** | 235,619,547 | 184,218,282 | 419,837,829 | 6,628,140 | 426,465,969 |
| | **Induced** | 280,484,995 | 137,156,160 | 417,641,155 | 7,060,636 | 424,701,791 |
| | **Total** | **11,035,324,165** | **802,504,538 (7.3)** | **503,241,109** | **1,305,745,648 (11.8%)** | **22,836,834** | **1,328,582,482(12)** |

## 5. Conclusion, Implications and Limitations

The study set out to estimate the impacts of tourism in the Rwandese economy in 2014 by firstly computing multipliers using inter-industry transaction tables for 26 industries. Results rank catering and accommodation service providers (food and beverage, hotels and restaurants) among the top ten sectors in employment creations. The food and beverage sector is ranked 4th economy-wide in terms of total employment creation while the hotels and restaurant sector is ranked 9th. The two sectors register 92% of their employment creation effect indirectly through industry interdependencies. However, the sectors rank poorly in labour income multiplier indicative of low quality jobs in the country's tourism industry (Hotel & restaurant = 13th; Food and beverage = 24th). Of the tourism characteristic sectors, retail trade has a higher effect on labour incomes and is ranked 7th in the economy.

Internal tourism expenditure, a portion of internal tourism consumption was resolved into demand for commodities from corresponding tourism industries in order to reveal pathways through which impacts reverberate in the economy. Results show that 94% of jobs supported by direct spending in tourism catering, accommodation, sundry transportation services and shopping industry (hotels& restaurants, food & beverage, transport and retail trade sub-sectors) were created in agriculture and fishing sectors with which it had the strongest links in employment creation. However, financial intermediation and business activities sector, education/health and other services benefited from between 13% to 64% share of labour

incomes, output and value addition resulting from direct tourism expenditure indicative of stronger labour, income and value addition linkages with tourism characteristic industries.

Tourism internal expenditures contributed significantly to the economy creating 13% of total employment positions, 6.4% of labour incomes, 6.8% of value added and 7.3% of output. On the other hand, total investment in tourism generated 15% of all full time employment, accounted for 3% of labour incomes, supported 4% of total value addition and made up 5% of economy wide output in 2014. On its part, collective consumption made up 1% of employment and 0.2% of labour incomes, 0.2% value addition and 0.2% output created in the economy. Cumulatively, internal tourism expenditure, investment and collective consumption aggregating to about $447 million worth of international tourism demand created 1.64 million jobs (29%) and generated $295 million in labor incomes (9.7%), $617 million in total value addition (11.1%) and $1.33 billion in output (12%).

The services sector has played a significant role in sustaining Rwanda's economic growth. Between 2014 and 2015, services grew by 7% contributing to a 6.9% GDP growth. Current estimates project Rwanda's GDP growth to steadily accelerate to 7.2 % in 2018 and 7.8 % in 2020 (World Bank, 2018). Rwanda's socio-economic blue prints envisage that the services sector will continue driving this momentum with a greater contribution to GDP in an economy that is diversifying from dependence on agriculture. Our results show that due to its strong backward linkages with other service sectors *inter alia* financial intermediation/business activities, education, health and other services, tourism has potential to anchor the service sector's role in the country's economic growth. Interventions to grow internal tourism demand such as increasing tourism arrivals or promoting high-end gorilla tourism; boosting investment in tourism e.g. developing a conference tourism product and increasing tourism collective consumption through expenditure in marketing will as a result of indirect and induced effects create higher value addition in the services sector in addition to higher labour incomes and output.

Rwanda's unemployment currently stands at 16.7% (NISR, 2018). An estimated 53% of the population is below 16 years implying that in the coming years, the workforce will substantially grow increasing youth unemployment currently at 21% (MFEP, 2016). In 2014, agriculture accounted for 71% of employment in the country. Currently, over 45% of the people are employed in fields classified as "skilled agricultural, forestry, and fishery work" (MFEP, 2016). Our results support the position that due to its strong employment linkages with agriculture, tourism stands to play an important role in providing new job positions in agriculture, the main employer through inter-industry interdependency. This is in addition to direct jobs that an increase in internal tourism demand will create in tourist attractions and service providers. However, lower labour income multiplier for tourism sectors suggest low quality jobs diminishing per capita impact of tourism created jobs in the economy.

This study used internal tourism expenditure, a portion of internal tourism consumption as a basis for calculating relevant multipliers and associated effects. This limitation has the effect of understating multiplier magnitudes. Future studies can re-estimate the multipliers by considering internal tourism consumption in its entirety using a more robust methodology such as computable general equilibrium (CGE) modelling.

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