

**TOURISM INDUSTRIAL LINKAGES IN RWANDA'S ECONOMY**

**Odunga PIUS**

School of Business, Kirinyaga University, Kenya

Corresponding author: Odunga PIUS

E-mail: Podunga5@gmail.com

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**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 the ramifications of tourism beyond accounting for initial impacts. This study evaluates the economic impacts of tourism in Rwanda by examining its effects on employment, labor incomes, and output and value addition. Rwanda's 2014 Input-Output tables were used to compute direct, indirect, induced and total (SAM Type) multipliers which interacted with internal tourism demand data from Rwanda's 2014 tourism satellite account to estimate impacts. Labor income, output and value-added multipliers indicate that tourism has strong linkages with service sectors, while the employment multiplier indicates robust linkages with agriculture. Results indicate that internal tourism demand created 29% of all jobs, generated 9.7% of labor 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 labor income, increased output and value addition and higher employment in agriculture and other associated sectors. This study's main contribution is taking into account the predominantly informal sector of Rwanda's economy, especially with respect to the domestic tourism market. Future studies could estimate the magnitude of leakages from the economy through consumption and production processes.

**Keywords:** Input-Output analysis, Multiplier Effects, Rwanda, Social Accounting Matrix (SAM), Total Tourism Internal Demand (TTID).

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**INTRODUCTION**

Under Rwanda's Vision 2020 and the Economic Development and Poverty Reduction Strategy (EDPRS2), 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 (MoTI, 2009). In addition to generating foreign exchange earnings and creating jobs for the Rwandese 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. Economic impacts studies serve as tools for guiding policy design, decision making and management by a wide spectrum of stakeholders (Fretchling and Smeral, 2010; Smeral, 2011; Wei et al., 2013; Fretchling, 2013). The primary objective of the study was to evaluate the economic impacts of tourism in Rwanda's economy for the year 2014. The study relies on multipliers and internal tourism demand data from the tourism satellite account (TSA) to estimate the impacts.

**The Economy of Rwanda.** 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. 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.

**Rwanda's Tourism Industry.** By 2011, the tourism industry was contributing 63% of the country's service export earnings and boosting balance of payments (Ministry of Trade and Industry, 2009). 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). 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 (RTSA, 2014).

**Tourism Economic Impact Analysis.** A range of alternative approaches for assessing tourism economic impacts have been developed (Briassoulis, 1991; 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. 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 (Frechtling & Horváth, 1999; Dwyer, Forsyth & Spurr, 2004; Frechtling, 2013). Other methods used to study economic impacts include General equilibrium modeling (GEM).

Tourism economic impacts are triggered by an initial shock due to a change in final tourism demand (Frechtling & Horváth, 1999; Dwyer, L., Forsyth, P. and Spurr, R., 2004; Miller & Blair, 2009; Atan and Arslanturk, 2012; Michálková et al., 2018; Ivandić and Šutalo, 2018). 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 match demand with supplying industries. Appropriate industry multipliers are then applied to tourism visitor final demand for each characteristic tourism commodity and an asset to compute impact estimates at the three levels of TTID aggregation. This study applies the Impact Analysis for Planning (IMPLAN) software to evaluate tourism economic impact (Appendix). The software is widely used to quantify effects of changes in production and to demonstrate the importance of a given industry in an economy.

## **METHODS**

The economic impacts of tourism can be estimated using economic models that identify and quantify the linkages between different sectors of the economy (Briassoulis, H., 1991; Dwyer et al., 2004; Hara, T., 2008; Stynes, D., 1999). The relationship between expenditure and output, and income and employment can be described by multiplier effects (Frechtling and Horvath, 1999; Jones, C. and Munday, M., 2004; Hara, T., 2008; Frechtling, D.C., 2013). The standard approach is to estimate the economic impacts of tourism by using impact models in order to derive appropriate multipliers (Stynes, D. J., 1999; Kumar, J., & Hussain, K., 2014). Tourism Satellite Accounts (TSAs) provide input data for entry into an economy's input-output model (Hara, T., 2012). TSAs are constructed to aggregate a country's tourism activities into a single industry. The aggregated tourism industry is inserted as one explicit industry in the I-O table, thus avoiding double counting. 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 modeling methodology (Briassoulis, H., 1991; Jones and Munday, 2004; Miler and Blair, 2009; Surugiu, C., 2009; Hasan GÜL, 2013). SAM describes the structure of an economy in terms of links between production, income distribution and demand (Akkemik, A.K. 2012). Besides I-O and TSA tables, public sector accounts, national income accounts and balance of payments are used to construct SAM.

**Research Methods.** Two inputs are required to assess the 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; Song, H., Dwyer, L., Li, G. and Cao, Z., 2012; Pratt, S., 2015). These inputs were obtained from the following data sources:

**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. The tables are available at <http://www.worldmrio.com/country/> which contains 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 of \$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 totals of row sums of this sub-matrix compute 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.

**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) and UNWTO IRTS (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 collective tourism 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, and 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 the government on various tourism industry support and administrative services.

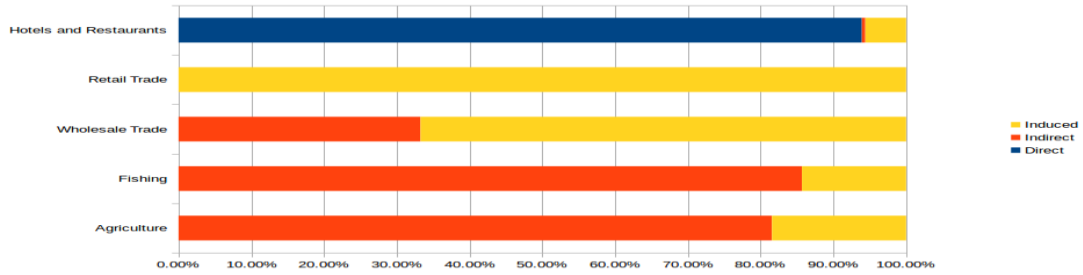
## **RESULT AND DISCUSSION**

This paper captures the effects of internal tourism expenditure/consumption on accommodation, Food and Drinks, Passenger Transport, Travel Agency and Tour Operations, and shopping sub-sectors of Rwanda's tourism industry/sector. These effects are premised on employment, labor income, total value addition and output.

### **Industrial and Sectorial Linkages**

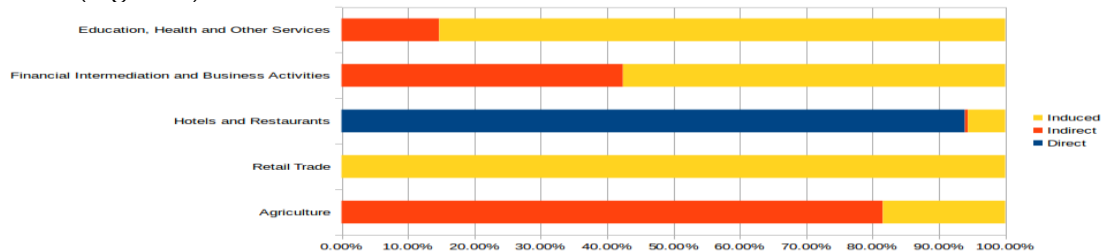
#### **1. Accommodation (\$124 million)**

**Employment.** Agriculture and Fishing sectors have the strongest linkages with the Accommodation sub-sector in terms of employment creation (Figure 1).



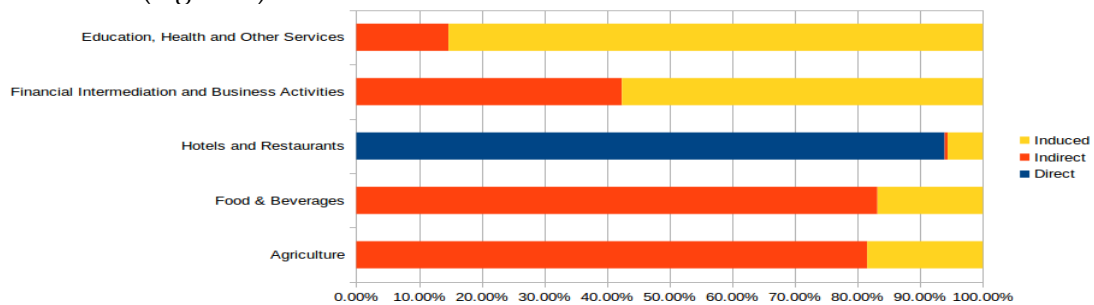
**Figure 1. Accommodation Employment**

**Labour Income.** Financial Intermediation/Business Activities and Education/Health/Other Services sectors have the strongest linkages with the Accommodation sub-sector in terms of labor income generation (Figure 2).



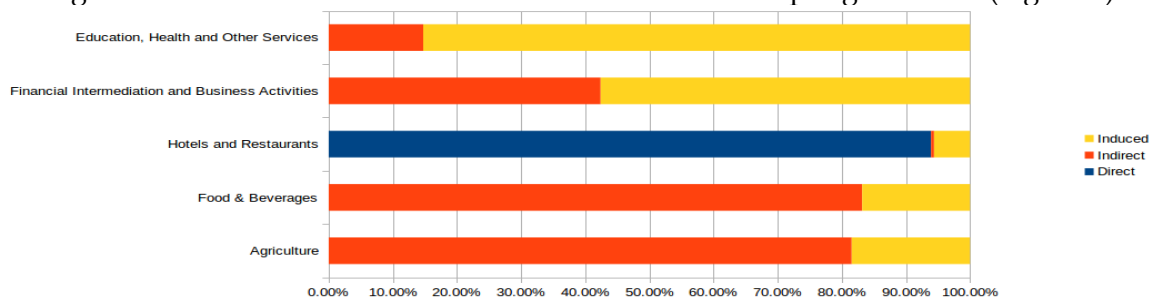
**Figure 2. Accommodation Labour Income**

**Total Value Added.** Financial Intermediation/Business Activities and Agriculture sectors have the strongest linkages with the Accommodation sub-sector in terms of total value addition to the economy of Rwanda (Figure 3).



**Figure 3. Accommodation Value Added**

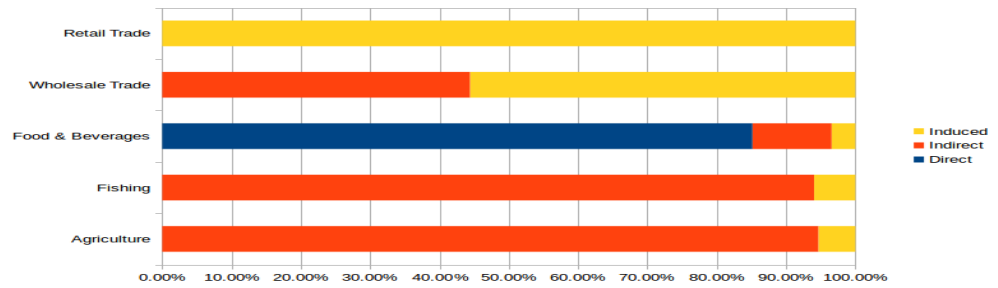
**Output.** Financial Intermediation/Business Activities and Food/Beverage sectors have the strongest linkages with the Accommodation sub-sector in terms of output generation (Figure 4).



**Figure 4. Accommodation Output**

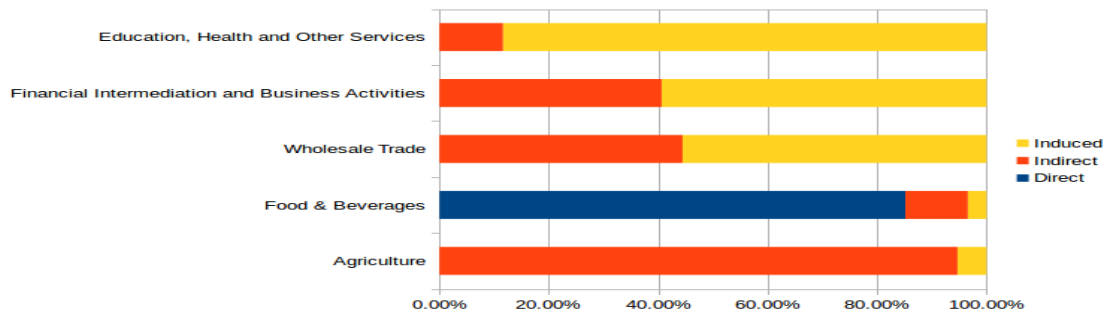
## 2. Food and Drinks (\$54 million)

**Employment.** Agriculture and fishing sectors have the strongest linkages with the Food and Drinks sub-sector in terms of employment creation. (Figure 5).



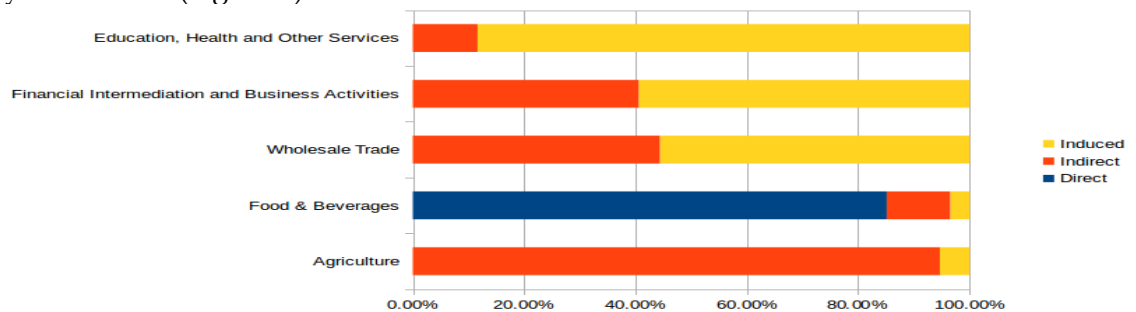
**Figure 5. Food & Drinks Employment**

**Labour Income.** Agriculture and Financial Intermediation/Business Activities sectors have the strongest linkages with the Food and Drinks sub-sector in terms of labor income generation (Figure 6).



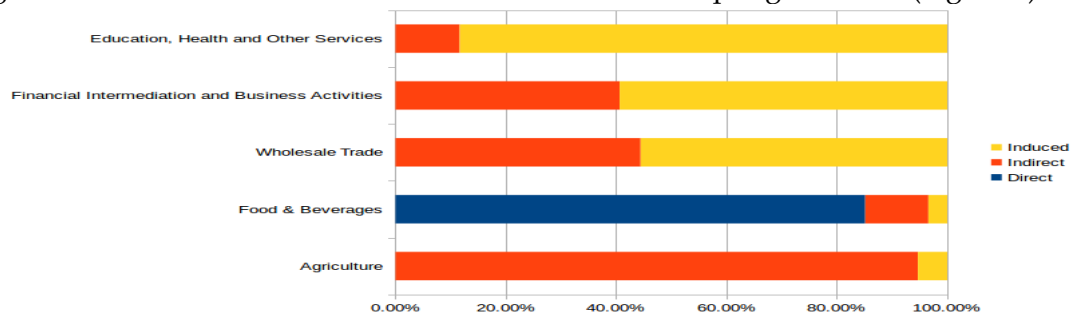
**Figure 6. Food & Drinks Labour Income**

**Total Value Added.** Agriculture and Financial Intermediation/Business Activities sectors have the strongest linkages with the Food and Drinks sub-sector in terms of total value addition to the economy of Rwanda (Figure 7).



**Figure 7. Food & Drinks Value Added**

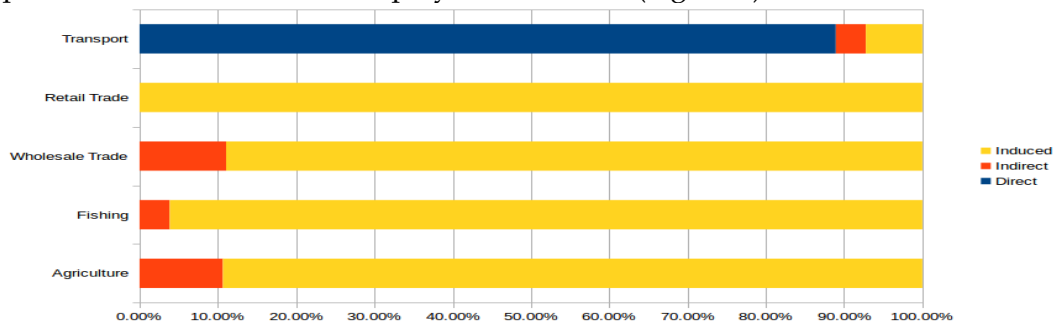
**Output.** Agriculture and Financial Intermediation/Business Activities sectors have the strongest linkages with the Food and Drinks sub-sector in terms of output generation (Figure 8).



**Figure 8. Food & Drinks Output**

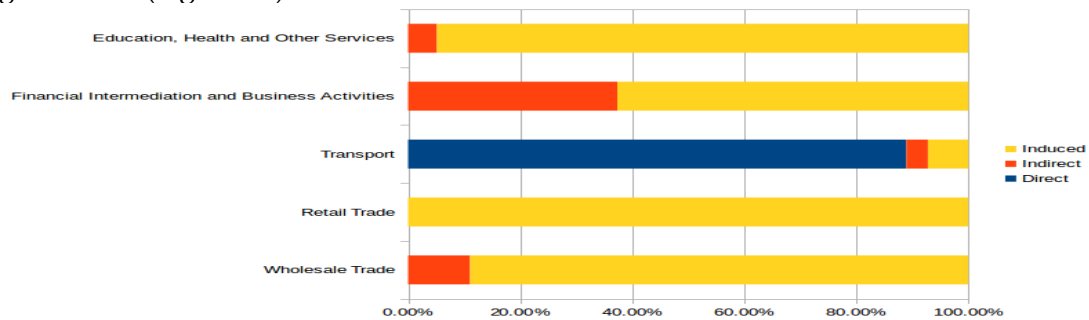
### 3. Passenger Transport (\$35 million)

**Employment.** Agriculture and Transport sectors have the strongest linkages with the Passenger Transport sub-sector in terms of employment creation (Figure 9).



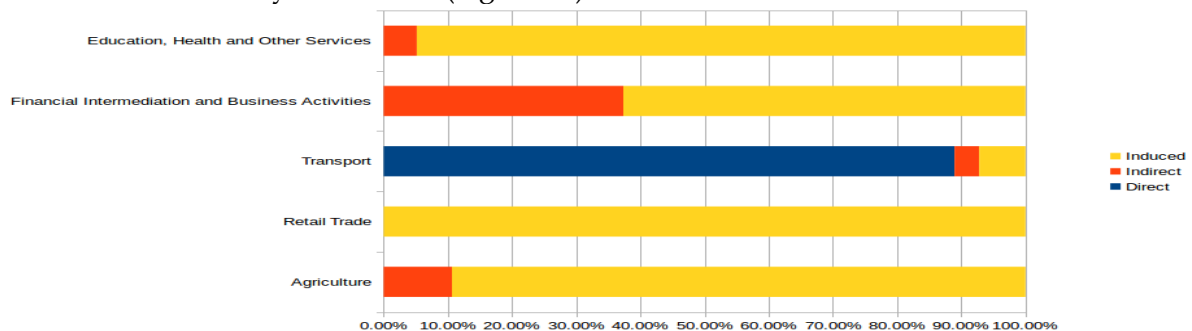
**Figure 9. Passenger Transport Employment**

**Labour Income.** Financial Intermediation/Business Activities and Education/Health/Other Services sectors have the strongest linkages with the Passenger Transport sub-sector in terms of labor income generation (Figure 10).



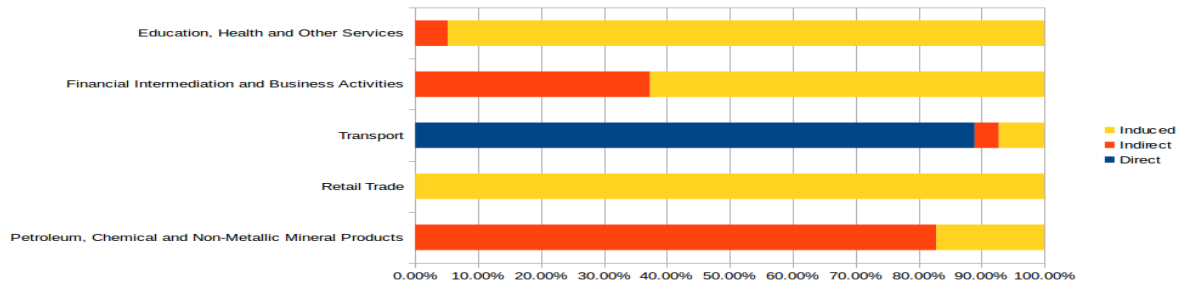
**Figure 10. Passenger Transport Labour Income**

**Total Value Added.** Financial Intermediation/Business Activities and Education/Health/Other Services sectors have the strongest linkages with the Passenger Transport sub-sector in terms of total value added to the economy of Rwanda (Figure 11).



**Figure 11. Passenger Transport Value Added**

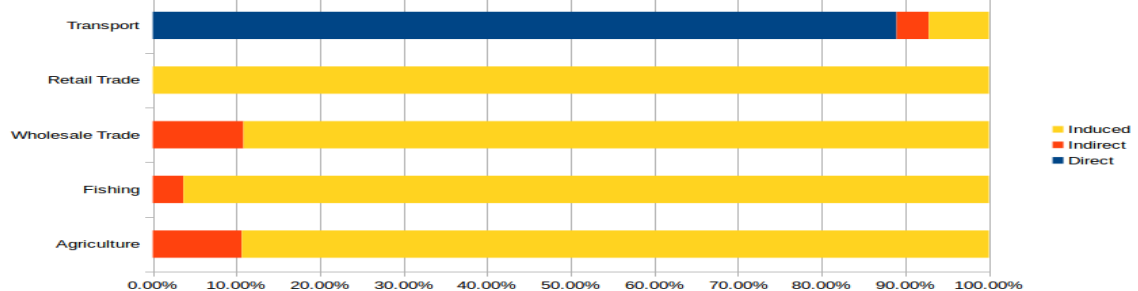
**Output.** Financial Intermediation/Business Activities and Education/Health/Other Services sectors have the strongest linkages with the Passenger Transport sub-sector in terms of output generation (Figure 12).



**Figure 12. Passenger Transport Output**

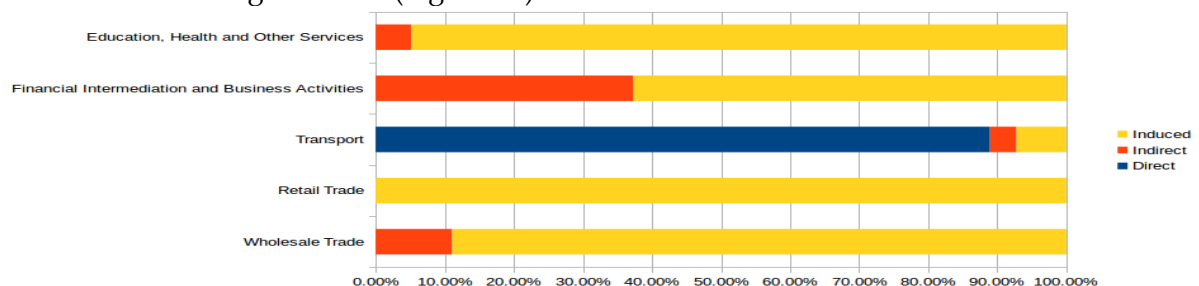
#### 4. Travel Agency and Tour Operations (\$4 million)

**Employment.** Agriculture and Transport sectors have the strongest linkages with the Travel Agency and Tour-Operations sub-sector in terms of employment creation (Figure 13).



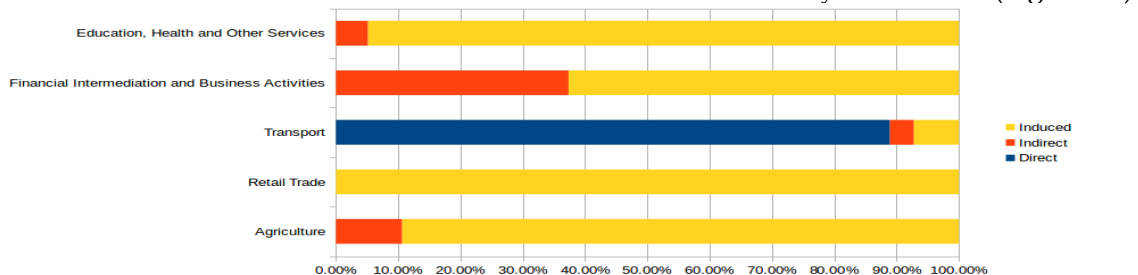
**Figure 13. Travel Agency & Tour Operations Employment**

**Labour Income.** Financial Intermediation/Business Activities and Education/Health/Other Services sectors have the strongest linkages with the Travel Agency and Tour-Operations sub-sector in terms of labor income generation (Figure 14).



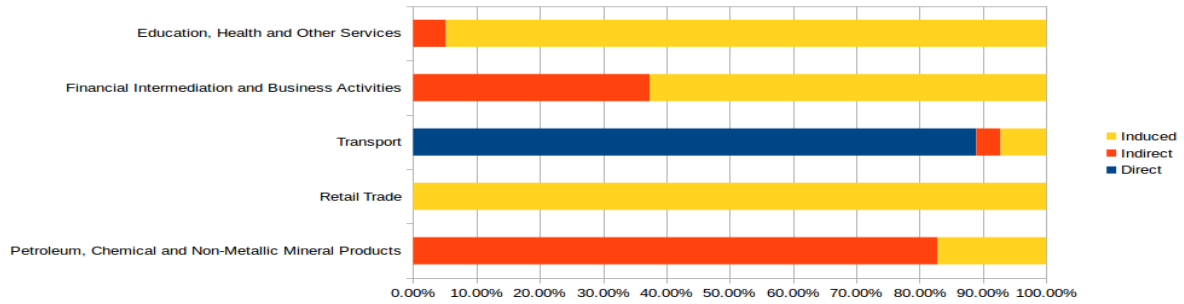
**Figure 14. Travel Agency & Tour Operations Labour Income**

**Total Value Added.** Financial Intermediation/Business Activities and Education/Health/Other Services sectors have the strongest linkages with the Travel Agency and Tour-Operations sub-sector in terms of total value addition to the economy of Rwanda (Figure 15).



**Figure 15. Travel Agency & Tour Operations Value Added**

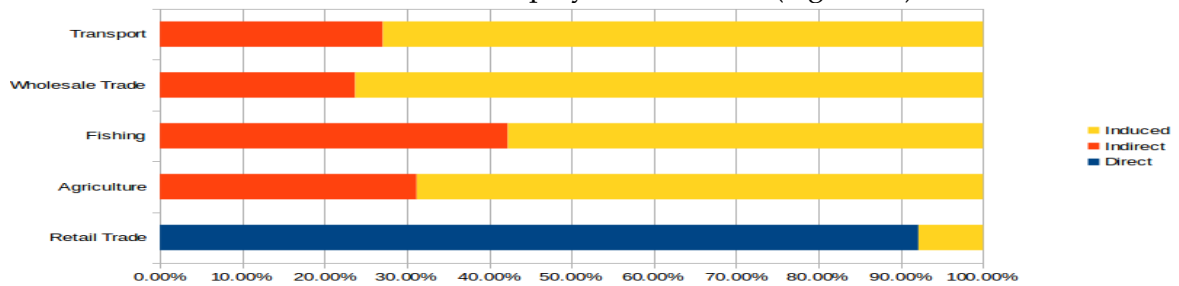
**Output.** Financial Intermediation/Business Activities and Education/Health/Other Services sectors have the strongest linkages with the Travel Agency and Tour-Operations sub-sector in terms of output generation (Figure 16).



**Figure 16: Travel Agency & Tour Operations Output**

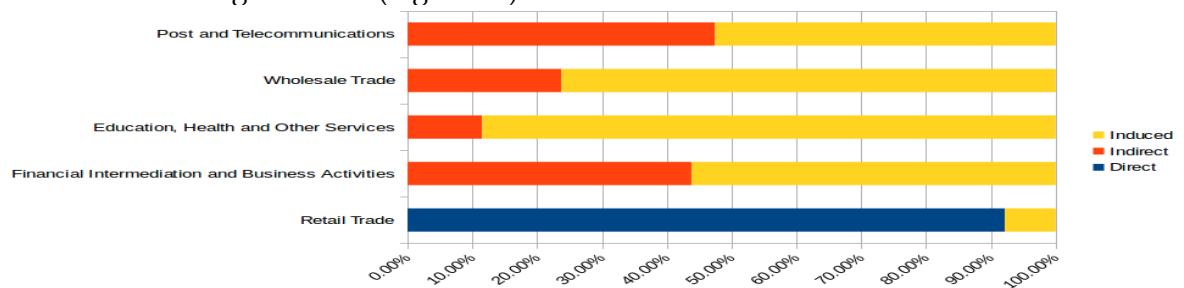
### 5. Shopping and Other Expenses (\$71 million)

**Employment.** Agriculture and Fishing sectors have the strongest linkages with shopping and other related services sub-sector in terms of employment creation (Figure 17).



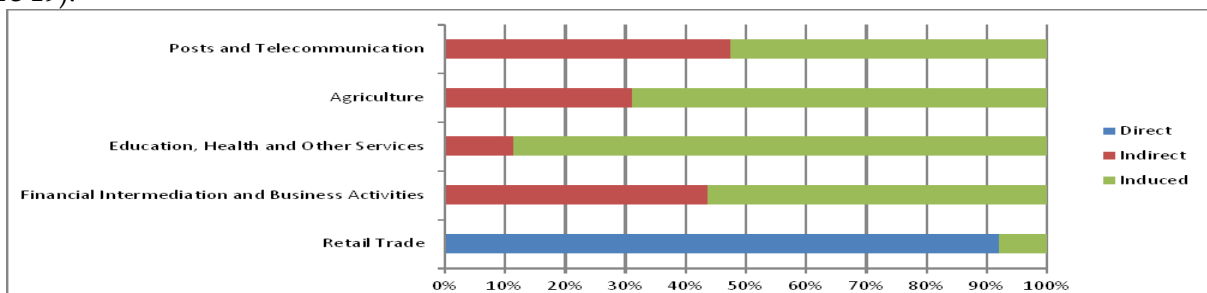
**Figure 17: Shopping Employment**

**Labour Income.** Financial Intermediation/Business Activities and Education/Health/Other Services sectors have the strongest linkages with the shopping and other related services sub-sector in terms of labor income generation (Figure 18).



**Figure 18: Shopping Labour Income**

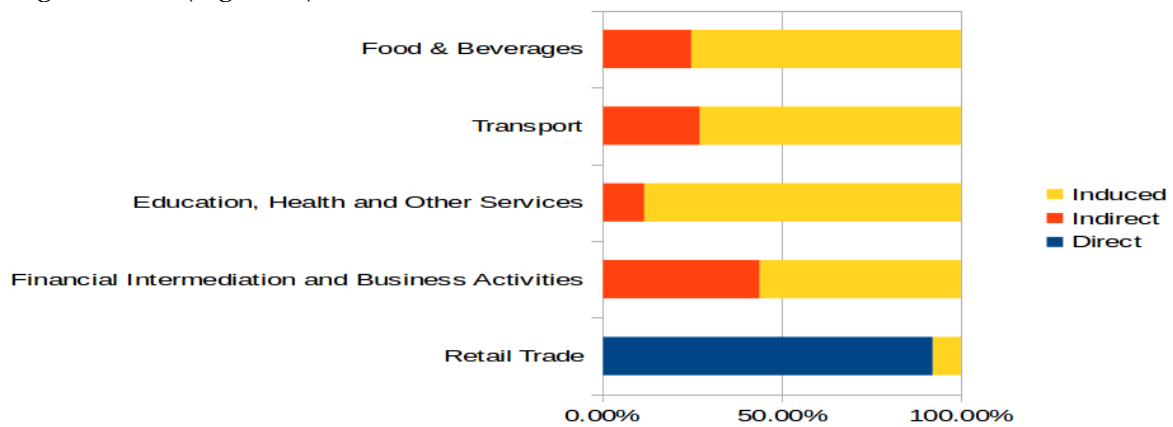
**Total Value Added.** Retail trade and financial intermediation/Business activities have the strongest linkages with shopping and other related services sub-sector in terms of value addition (Figure 19).



**Figure 19: Shopping Value Added**



**Output.** Financial Intermediation/Business Activities and Education/Health/Other Services sectors have the strongest linkages with the shopping and other related eservices sub-sector in terms of output generation (Figure20).



**Figure 20: Shopping Output**

The above analysis captured the multiplier effects of international, regional and domestic tourists' expenditure and consumption within the tourism sector itself and on the entire general economy of Rwanda. The employment, labor income, total value addition and output effects (direct, indirect, induced and total) were assessed within various sub-sectors of the tourism sector/industry.

## CONCLUSION

This study evaluated economic impacts of tourism in Rwanda by examining its effects on employment, labor incomes, and output and value addition. Rwanda's 2014 Input-Output tables was used to compute direct, indirect, induced and total (SAM Type) multipliers which were interacted with internal tourism demand data from Rwanda's 2014 tourism satellite account to estimate impacts. Labor income, output and value added multipliers indicate that tourism has strong linkages with service sectors, while employment multiplier indicates robust linkages with agriculture. Results indicate that internal tourism demand created 29% of all jobs, generated 9.7% of labor 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 labor income, increased output and value addition and higher employment in agriculture and other associated sectors.

This study's main contribution is taking into account the predominantly informal sector of Rwanda's economy especially with respect to the domestic tourism market. Future studies could estimate the magnitude of leakages from the economy through consumption and production processes.

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