

RESEARCH ARTICLE

Economic sustainability? Examining the linkages and leakages between agriculture and hotels in Bhutan

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Abstract

Bhutan is known for its approach to high-value, low-volume tourism development. Bhutan has been cited as an example of a best case approach to sustainable tourism. However, like other landlocked countries, Bhutan relies heavily on imported goods from neighbouring countries such as India and Thailand, leading to significant economic leakages. This raises the question of how economically sustainable Bhutan's tourism is. This research employs a mixed microeconomic and macroeconomic analysis of linkages and leakages between different sectors in the Bhutanese tourism industry, in particular hotels and agriculture to ascertain the volume and value of these leakages.

KEYWORDS

Bhutan, developing country, food and beverages, leakages, linkages, sustainability

1 | INTRODUCTION

Tourism can contribute considerably to poverty alleviation in developing countries (Scheyvens & Russell, 2012). From an economic perspective, minimizing leakages (tourism expenditure that leaves the destination economy) is seen as an important strategy for sustainable tourism development (Garrigós-Simón, Galdón-Salvador, & Gil-Pechuán, 2015). Higher leakages correspond to lower economic benefits. The minimization of leakages to a large extent entails the strengthening of intersectoral linkages.

A distinction can be made between forward linkages (one sector supplying goods and services to other sectors) and backward linkages (the demands of a sector for supplies from other sectors). The strengthening of backward linkages in the supply chain from hotels and restaurants and agriculture can assist local communities, particularly in developing countries, where a large informal sector often exists (Telfer & Wall, 2000). Improving linkages in the supply chain from hotels and restaurants and agriculture is one tangible way to alleviate poverty in developing countries (Meyer, 2007).

Developing countries tend to exhibit high leakages (Pratt, 2015a), and landlocked countries, without access to ports, are particularly disadvantaged in that they tend to pay more and wait longer for imported oil, food, and other goods. These political and economic handicaps, which are not borne by countries with direct access to

the high seas, are a major reason why 16 of the world's 31 landlocked developing countries are among the poorest in the world (World Bank, 2008). Despite this, Garrigós-Simón et al. (2015) found very few, if any, analyses of leakages being undertaken of landlocked countries.

To address this research gap, this research contributes to an understanding of the economic contribution and sustainability of tourism in landlocked countries by examining the economic linkages and leakages between the agriculture and hotel sectors in the landlocked economy of Bhutan. Research on sustainable tourism and the impacts of tourism in Bhutan has been accruing in recent years (Brunet, Bauer, De Lacy, & Tshering, 2001; Gurung & Seeland, 2008; Nyaupane & Timothy, 2010; Suntikul & Dorji, 2016). However, economic linkages and leakages in Bhutan tourism have not yet been studied. This article contributes to this body of knowledge in addressing the specific issue of economic linkages and leakages that can affect the benefits from tourism gained by Bhutan and its people.

In doing this, we adopt a partial value chain analysis, looking at the linkages between hotels and the agricultural sector, as strengthening this link can help in contributing to poverty alleviation, as mentioned above. The "value chain" perspective is understood as

the full range of activities which are required to bring a product or service from conception, through the different phases of production (involving a combination

of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use. (Kaplinsky & Morris, 2001)

An analysis of the tourism value chain can reveal linkages between different sectors that contribute to the tourism economy (Sofield, 2007).

This research estimates economic leakages of tourism in Bhutan in the areas of food and beverages to gauge the economic sustainability of this sector in this landlocked nation, identifying obstacles and constraints for improved linkages between agriculture and the tourism and hospitality sector in Bhutan. More specifically, the objectives of the research are (a) to estimate the level of imported food and beverages purchased annually by hotels in Bhutan, (b) to identify potential obstacles and constraints to greater use of local produce, and (c) to ascertain the potential (in both value and volume of specific types and varieties of produce) for domestic production/import substitution. This paper addresses the relationship between hotels and local food and beverages both at the micro level, where in-depth interviews are conducted with decision makers in hotels who undertake the food and beverage purchases (Objectives 2 and 3), and at a macroeconomic level, where the latest input-output table for Bhutan is used to analyse the import quotient and linkages between the hotels and restaurant sector and the remainder of the economy (Objective 1). This is one of the novel features of this research. This study contributes to the literature by examining the special case of Bhutan, bringing at least three distinct factors to this discourse:

First, although previous literature has examined developing countries, much of this has been on island economies. Much less attention has been devoted to landlocked nations like Bhutan. Second, Bhutan is often seen as an archetype of sustainable tourism development that tightly controls the number of international tourists through a high per diem price and regulates behaviour of tourists by assigning a tour guide to each travel party. As such, the emphasis on sustainability will be diminished if a high proportion of the potential economic benefits leak out of the country. Third, the traditional Buddhist culture of Bhutan introduces some unique factors to the issue of leakages, such as a taboo against the killing of animals within the country despite the presence of meat in the traditional diet and in the food provided to tourists, the effects and implications of which are explored in this research. In order to establish an understanding of the context of this study, the following section expands in greater detail upon the particularities of tourism in Bhutan.

2 | TOURISM IN BHUTAN

2.1 | The economics of Bhutan tourism

Bhutan is a landlocked Himalayan nation, bordered by China on the north and India on the south, with a population of around 750,000. Bhutan was largely isolated until 1974, when it first began to allow tourism. Initially, tourists entered the country from India by land and paid an all-inclusive daily fee of U.S.\$130. Air transport to Bhutan began in 1983, with the opening of the international airport at Paro. The national carrier, Druk Air, began operating in 1988. Visitor fees

to the country have been raised incrementally, and since 2012, the tariff has been U.S.\$250 per day for high seasons and U.S.\$200 for low seasons. This tariff includes all meals, a licenced tour guide, all internal transportation (excluding internal flights), camping equipment and haulage for trekking tours, a visa fee of U.S.\$40, and a “sustainable tourism royalty” of U.S.\$65, which supports the provision of free education and health care, infrastructure investment, and poverty alleviation measures in the country.

International tourist arrivals to Bhutan grew from approximately 23,000 in 2009 to 52,783 in 2013 (World Bank, 2015), whereas receipts from tourism increased from U.S.\$51 million to U.S.\$94 million. Average per tourist per night expenditures in Bhutan in 2015 were U.S.\$285.55, consisting of an average of U.S.\$234.75 gross tour package expenditure and U.S.\$50.80 in out-of-pocket purchases, including items such as souvenirs, upgrades to four- or five-star hotels, and surcharges for groups of fewer than three (Tourism Council of Bhutan, 2016). About 56.4% of these expenditures go to the tour operator, 26.3% to the government, and the remaining 17.3% consist of out-of-pocket purchases, gratuities, upgrades, and so forth that go to individuals, businesses, or hotels. Large parts of the tour operators' portion are used for staff salaries (27.6%) and food and beverages (42.3%). All told, an estimated 80.3% of the income from these expenditures stay in Bhutan for the first cycle. However, much of this is subsequently used to purchase import goods and services, in particular, food and beverages.

According to the Tourism Council of Bhutan (2014), over 50% of all hotels, rooms, and beds in Bhutan are located in the cities of Thimpu and Paro (see Table 1). Thus, these two locations were the focus of the primary research.

2.2 | Tourism and Bhutanese traditional culture

Bhutan's constitution establishes Vajrayana Buddhism as the state religion, and Buddhist principles of tolerance, peacefulness, and compassion characterize Bhutanese people and the image of the country. These principles also profoundly influence governance and policy in Bhutan. The Gross National Happiness (GNH) policy, which enshrines happiness, not economic production or material wealth (as measured in gross national product) as the measure of national well-being and development aims, is the best known manifestation of this stance (Ura, Alkire, Zangmo, & Wangdi, 2012). The directive was inaugurated in 1972 by King Jigme Singye Wangchuk. GNH is defined in terms of nine domains: Psychological well-being, Health, Time use, Education, Cultural diversity and resilience, Good governance, Community vitality, Ecological diversity and resilience, and Living standards.

TABLE 1 Accommodation statistics for Bhutan (2014)

Dzongkhag	Arrivals	Bed nights	Hotels	Rooms	Beds
Paro	43,707	102,116	37	964	1,930
Thimphu	41,594	73,645	27	756	1,512
Other	81,679	127,174	59	1,085	2,130
Total	166,980	302,935	12	2,805	5,572

Source: Tourism Council of Bhutan (2014).

GNH also influences Bhutan's approach to tourism development. Bhutan's Minister for Economic Affairs has stated, "our tourism policy is inspired by the philosophy of Gross National Happiness, and emphasizes the harmony between tradition and modernity, between Man and Nature, and the importance of preserving our living local systems in an era of globalization" (Royal Government of Bhutan, 2005).

Buddhist beliefs in karma and concern for the well-being of all life are embedded in the country's culture, shaping its development aims. This belief system deters many Bhutanese from actions that harm any sentient being. The practice of *Tsethar* (from *tse*, life, and *thar*, liberation), the freeing of animals from imminent slaughter, is one manifestation of this credo put into practice. To exploit other living things as meat or as draught animals is seen as contrary to this striving to eliminate suffering and fear among all beings in the world. This is not to say that meat is absent from the Bhutanese diet. Many staple Bhutanese dishes include meat, which is not produced in Bhutan but is imported, primarily from India. This particularly Bhutanese situation, in which consumption of meat is culturally sanctioned but slaughtering of animals is taboo, inevitably contributes to economic leakages.

The consumption of meat by Bhutanese natives is not unrelated to development of tourism in the country. Until recently, Bhutan was largely self-sufficient, and eating habits were correspondingly frugal, with very limited consumption of meat. The opening up and modernization of Bhutan, of which international tourism is one facet, has brought prosperity and more wide-ranging consumption habits, including increasing eating of meat (Chophel, Thinley, & Gyaltshen, 2012). Even as the Bhutanese government seeks strategies to pursue national objectives of self-reliance and food self-sufficiency in the face of a growing trade imbalance, Bhutanese aversion to the killing of animals was reaffirmed in the outrage expressed at rumours (which the government denies) of plans to build a slaughterhouse in the country (Subba, 2015).

These examples are indicative of the effect of cultural and social factors on linkages and leakages in tourism, as will be explored in more generally and in detail in the following section.

3 | LITERATURE REVIEW

Through the tourism supply chain, the local economy can benefit economically from tourism in a variety of ways (Mitchell, 2013). Meyer (2007) highlights the importance of strong linkages between the tourism sector and its supplying sectors, such as agriculture, to minimize economic leakages. Economies with weak intersectoral linkages may need to import large quantities of products, increasing leakages (Kokkraniakai, McLellan, & Baum, 2003). This can occur with procurement of food and beverages for tourists, hiring foreign workers instead of local staff, especially management (Hohl & Tisdell, 1995), or outside sourcing of souvenirs and transportation (Lejárraga & Walkenhorst, 2010). Different linkages take on different degrees of importance in different local or national contexts. A study in Botswana found local people's employment in tourism establishments to be the most important contributor to avoiding economic leakages (Rylance & Spenceley, 2017), whereas an earlier study in the Gambia (Mitchell & Faal, 2007) identified food supply and craft

markets as the pivotal points for economic linkages from tourism to the local economy.

The link between agriculture and tourism is one of the means through which leakages can be avoided and the benefits of tourism dispersed to local communities (Thomas-Francois, Von Massow, & Joppe, 2016). Food purchases can comprise about one third of tourist expenditures (Belisle, 1984) and have the potential to generate income and employment to local economies. Recent research investigates leakages and linkages between agriculture and tourism in different contexts around the world. In research conducted in Turkey, Yildizi (2017) found that, in addition to the obvious benefits to food producers, hospitality businesses also benefit from local sourcing of food, through reduced prices and more authentic ingredients, whereas tourists benefit from a perceived higher quality experience. A study in Tuscany (Ferrari, Jiménez, & Secondi, 2017) discovered that tourism expenditures in agriculture can motivate an overall higher demand for local food products and an increase in value added for the local economy. In Ha Long Bay, Vietnam, leakages are associated with the extended supply chains of the increasing number of national firms that bypass local suppliers in favour of national chains (Hampton, Jeyacheya, & Long, 2018).

Thomas-Francois et al. (2016) suggest that service-dominant logic may strengthen farmers-hotels supply chain relationships, characterized by a consumer-centric supply chain and strong and valued business relationships among stakeholders.

Linking the tourism sector and its supply chain locally has significant implications for tourism's potential to contribute to poverty alleviation (Hummel & van der Duim, 2012). In general, foreign-owned or foreign-managed hotels tend to rely on imported food products to a greater extent than smaller locally owned accommodation establishments. However, in some cases such as Indonesia, Telfer and Wall (2000) demonstrate that upscale hotels are able to purchase locally grown high-quality produce, resulting in a higher proportion of expenditure remaining in the local economy. They find that food distribution networks are key to generating a higher economic return to small local suppliers. Further, researchers Pratt (2013) and Telfer and Wall (2000) have proposed that chefs should be encouraged to produce more local dishes, as opposed to international cuisine, as this can be a tourist attraction in itself. However, Belisle (1984) notes that by developing stronger links with agriculture, the tourism industry can promote hinterland development and strengthen urban-rural networks but can also harm local food production by using land and diverting labour that would otherwise be engaged in agrarian production (Telfer & Wall, 1996).

Pillay and Rogerson (2013) provide a useful summary of the challenges in building agriculture-tourism linkages. Torres (2003) determines links between tourism and agriculture in Mexico to be quite weak and outlines various demand and supply factors that inhibit strengthening of linkages between these sectors. On the demand side, Torres notes that certain types of tourists, those of certain nationalities and those who are more adventurous, may be more willing to try local foods and hence indirectly support demand for local ingredients (Telfer, 2000). Local chefs though may have some concerns with the hygiene and sanitation of goods from local producers (Bélisle, 1983). Expatriate chefs tend to also demand more imported foods

and are less inclined to use locally produced goods (Pratt, Mackenzie, & Lockwood Sutton, 2017).

Meeting tourists' demands in terms of their taste can impact demand for locally sourced or imported ingredients. International tourists, while hoping to taste local cuisine, seem reluctant to have local dishes all the time and like to revert to international food and beverages (Pratt, 2013). Further, four-star and five-star hotels need to offer a range of international foods to maintain their reputation for high quality.

Several supply-side factors constrain the use of locally produced goods in tourism, including poor local growing conditions or adverse weather events, such as limited, excessive, or unpredictable rain and frequent cyclones. For the most part, this is beyond the local community's control. A common factor hotels give for not using more local agricultural products is the inconsistent and lower quality of such products (Bélisle, 1983; Rogerson, 2012). Reasons for the lower and inconsistent quality include a limited range of potential ingredients, lack of implementation of latest technology, lack of technical knowhow to produce the "right" types of foods in sufficient quantities, inadequate distribution networks from farms to hotels, and a lack of governmental recognition and support to the agricultural sector. Even if the "right" foods are produced in sufficient quantities, there may not be local food processing enterprises to add value to these raw products. If these products had some value-added component, local ingredients could be transported to end users more easily and quickly, requiring less storage and minimizing spoilage. Green and Dougherty (2009) note that tourists are willing to pay a price premium for local produce so hotels and restaurants need to be persuaded to source local ingredients.

Seasonal fluctuations in tourism may lead to a mismatch between what tourists (and hotels and restaurants) demand and what farmers and others in the food and beverage sector can supply. This, in turn, may lead to oversupply of certain types of foods, causing wastage or a decrease in the price of foodstuffs, having the flow-on effect of reducing income to suppliers. When demand is greater than supply, this may drive local suppliers to increase prices and/or may cause hotels and restaurants to source cheaper and more plentiful supplies from abroad.

The next section will explain the derivation and application of a methodology appropriate to the objectives of this research in further exploring the issues outlined above.

4 | METHODOLOGY

The research uses a two-pronged approach, using both primary and secondary data, to address the research objectives. The primary data are used to estimate the level of imported food and beverages purchased annually by hotels in Bhutan, to identify potential obstacles and constraints to greater use of local produce, and to ascertain the potential for strengthening the linkages between the agriculture and hotel sectors and minimizing the leakages from food and beverages, thereby maximizing contribution to the local and national economy and optimizing the potential for poverty alleviation. The secondary data are used to triangulate the import proportion and linkages

between the agriculture and hotel sectors. The secondary data enable a macroeconomic analysis of these sectors.

4.1 | Primary research—Semistructured interviews with hotels

In-depth interviews were conducted with the person most knowledgeable regarding purchasing practices and human resources in 19 hotels in Thimphu and Paro. Nineteen interviews were conducted among three-star or above hotels in these two cities (international tourists can only stay at three-star or above hotels). Although the sample size is relatively small in absolute terms, the sample represents 59.4% (19/32) of the hotels where international tourists can stay in those two cities. This results in a maximum sampling error of $\pm 14.6\%$. The sample is representative of the population of hotels in those locations, in terms of quality of hotel. For example, our sample contains 63.2% of three-star hotels whereas the population has 68.8% of hotels being three-star hotels. Four-star hotels make up 15.8% of the sample with the equivalent population proportion being 15.6% whereas the five-star hotels comprise 21.1% of the sample and 15.6% of the population. Further, seven of the hotels surveyed accommodate 19.25% of total bednights in Bhutan in 2013 (the other hotels we surveyed were not listed in the report; Tourism Council of Bhutan, 2014).

For smaller hotels, the title of the interviewee was Manager. For larger hotels, the interviewee was the General Manager. On occasions where the interviewee did not know information at the time, they were requested to research this information. The researchers later collected the questionnaire. Each interview lasted approximately 60 min. The data collection period was over two 2-week periods in 2015 and 2016, with 1 week in Paro and another week in the capital city of Thimphu on each occasion.

A detailed questionnaire sought general information (e.g., number of beds, occupancy rates, staff establishments, and operational costs) and then focused on food and beverage purchase costs and main products in five categories: (a) imported and local fruit; (b) imported and local vegetables; (c) imported and local poultry, meat, and fish; (d) imported and local processed foods; and (e) imported and local beverages. The questionnaire had been used extensively in other developing countries by several international development agencies (International Trade Centre, 2010). The survey ascertained what types of products hotels require, as well as listing all of the products that the hotel purchases, considering quantities, frequencies, and products currently unavailable. The interviews also asked hotel managers about the perceived benefits, if any, of buying locally produced goods over imported goods and the factors most important in determining food choices (quality, quantity, reliability, importer determined price, and speed of delivery).

Of the 19 establishments interviewed, 10 were three-star hotels, the minimum quality hotel at which international tourists can stay. Only domestic and regional tourists can stay at one-star and two-star accommodations. Five were four-star establishments, and four were in the five-star category. By international standards, hotels and resorts in Bhutan are relatively small. The average number of rooms in Bhutanese international hotels and resorts is 33, accommodating approximately 55 beds. The number of rooms in the hotels in this

study ranged from eight to 78. As tourists are only in Bhutan for a relatively short time, the stay at any one hotel is typically short. The average length of stay for the 19 interviewed establishments is 2.74 nights. Room rates vary depending on time of year. The rates ranged widely, from U.S.\$23.42 for one three-star hotel to U.S.\$800.00 for a luxury resort, with an average room rate of approximately U.S. \$150 per person per night. Table 2 shows a summary of statistics from the sample.

4.2 | Secondary research—Multiplier and linkage analysis

Linkages and leakages between sectors can also be analysed from a macroeconomic perspective through linkage analysis and the inspection of income and import multipliers, using secondary data (Archer & Fletcher, 1996; Kweka, Morrissey, & Blake, 2003; Pratt, 2015a). Linkage analysis shows levels of interdependency between different economic sectors. Developed by Chenery and Watanabe (1958), Hirschman (1958), and Rasmussen (1956), these methods have been used in other tourism studies by Cai, Leung, and Mak (2006) and Pratt (2015b). Forward linkages measure the extent to which a sector supplies goods and services to other sectors, whereas backward linkages measure the extent to which a sector demands goods and services from other sectors. These indices are normalized to the value of one so that forward linkages greater than one represent sectors that are strong suppliers to other sectors whereas backward linkages that are greater than one represent sectors that are strong demanders of other sectors. Forward linkages (FL) can be expressed as

$$FL_i = n \frac{\sum_j b_{ij}}{\sum_i \sum_j b_{ij}},$$

where n is the number of sectors and b_{ij} are the elements of the backward linkage multiplier matrix, and backward linkages (BL) can be expressed as

$$BL_j = n \frac{\sum_i b_{ij}}{\sum_i \sum_j b_{ij}}.$$

Input-output analysis shows the magnitude of the multiplier effects of a change in final demand throughout the economy (Miller & Blair, 2009). Calculating these multipliers involves transforming the input-output table so that, in matrix notation, $x = (I - A)^{-1}f$ where x is the vector of industry total outputs, I is an identity matrix, A is the technology matrix, and f is a vector of total final demands. Together,

TABLE 2 Accommodation statistics per hotel

	Mean	Median
Number of rooms	33	30
Number of beds	55	54
Length of stay	2.74	2
Room rate (U.S.\$)	150.31	81.95

Source: Authors' calculations from primary research.

$(I - A)^{-1}$ is referred to as the Leontief inverse matrix. By calculating the Leontief inverse matrix from an input-output table, analysts can identify direct and indirect economic impacts of a change in final demand and determine which sectors provide the largest flow-on effects throughout the economy. The gross value-added (GVA) or income multipliers for each sector are defined as the total value of income from compensation to labour (wages, salaries, etc.), taxes, and contribution to capital (gross operating surplus) as a result of a unit's worth of final demand for the output of that sector. In the same manner, import multipliers can also be calculated to determine total value of imports as a result of a unit's worth of final demand for the output of that sector.

The Asian Development Bank (2012) published the Supply and Use Tables from Bhutan with a base year of 2007 (see Table 6). This is the latest year for which an input-output table for Bhutan is available. These tables were manipulated to produce input-output multipliers and linkages indices in the conventional manner, showing the underlying economic structure of Bhutan's economy. There were 21 sectors in these tables. The multipliers and linkages of the sectors of "Agriculture, Hunting, Forestry, and Fishing"; "Hotels and Restaurants"; and "Manufacture of Food Products, Beverages and Tobacco" are of particular interest to this study.

5 | FINDINGS

5.1 | The Bhutanese hotel sector

Hotel expenses typically account for the largest portion of tourists' expenditures in Bhutan (Rinzin, Vermeulen, & Glasbergen, 2007). One indicator of sustainability of the hotel sector is the occupancy rate. Across the 19 respondents, the average low season occupancy rate is 30.7% whereas the high season occupancy rate is 68.2%. Overall, the average occupancy rate for these Bhutanese hotels is 49.3%. This implies a certain amount of seasonality, which has consequences for local farmers supplying goods to the hotel sector.

Approximately one fifth of Bhutanese tourists staying in three-star or higher hotels originate from the United States and almost another fifth come from China (Table 3). These two tourist segments have quite different tastes when it comes to food preferences. As can be seen in Table 3, although not directly comparable, the sample roughly matched the population data in terms of hotel guests' country of origin.

TABLE 3 Hotel guests' country of origin (percentage)

Country of origin	Sample	Population
USA	20.2	14.6
China	18.6	19.3
Thailand	13.4	7.7
Japan	7.6	5.0
India	4.6	N/A
Local market	3.9	N/A
Europe and others	31.7	53.4

Note. N/A = not available.

Source: Sample = primary research interviews/Population = Tourism Council of Bhutan (2016).

Interviewees report that about two thirds of their guests come for leisure and a further one fifth for business or conferences (Table 4). About one in eight tourists come to Bhutan for volunteering or work with non-governmental organizations. This last segment might be assumed to consume more local produce and be more concerned with the sustainability of their decisions while at a destination, including choice of foods.

5.2 | Sources of food and beverages

Food accounts for the highest expenses for hotels in Bhutan, with meat (33.9%; Table 5, Column A) named most often as the highest expenditure, followed by beverage (23.0%), processed foods (21.1%), and vegetables (12.7%). Interviewees were asked the value of food and beverages they purchased over the past 12 months in five categories, both locally produced and imported, with results tabulated in Table 5. Segmented by source, 53.8% (Column B) of food expenditure was imported whereas only 23.2% (Column C) was sourced domestically in Bhutan among hotels and resorts. The proportion of beverages sourced domestically and imported was similar (11.7%, Column B and 11.3%, Column C). Columns D and E in Table 5 show the breakdown of imported versus local food and beverage categories as a percentage of expenditure in that category. On average, the interviewed Bhutanese hotels imported 69.9% of food and 50.8% of beverages. The prominence of imported food and beverages is particularly pronounced for the five-star hotels, with 83.1% of beverages and 80.3% imported (80.7% of aggregate). There are significant differences by product category. For example, just over a third of all fruit (36.8%) is locally grown but over half of all vegetables (52.8%) are locally procured. In these categories, most of the items that are locally procured are also imported, including apples, oranges, watermelon, bananas,

pears, ginger, onion, chillies, cauliflower, and carrots. This suggests that the issue has to do with seasonality and insufficient volume of locally grown fruit and vegetables, rather than lack of availability of suitable locally produced produce.

Less than 30% of the meat, poultry, and fish (28.8%) used in the interviewed hotels is produced locally, consisting mostly of eggs, chickens, and a limited amount of river fish. Most meat products are imported, including seafood. Imported meat, poultry, and fish comprised 24.1% of total goods purchased, and imported processed foods comprised another 17.7%. This corresponds with Rinzin et al.'s (2007) research naming meat as the highest expenditure for hotels.

Like other predominantly subsistence economies, Bhutan has a limited value-added or food processing sector. Hence, most processed foods are imported. The only value-added processed foods produced domestically are dairy goods: milk, eggs, and cheese. About half of beverages are sourced locally, and half are imported. Bhutan produces beer, several different types of whiskeys, and other spirits including *ara*, a traditional alcoholic beverage made from rice, maize, millet, or wheat. Imported beverages include mostly drinks that Bhutan does not produce, such as wine.

Given that Bhutan is a developing country with a large subsistence economy, the interviewed Bhutanese hotels report that, of the locally produced food and beverages, a large proportion (58.8%) comes from poor and/or disadvantaged producers, suggesting that tourism potentially contributes to poverty alleviation, supporting earlier researchers' findings (Mitchell, 2013; Mitchell & Ashley, 2009).

When asked about current constraints, three main themes emerged from the interviews: seasonality, high prices, and consistency. Most interviewees reported that at certain times of the year, local producers were able to meet demand. However, in winter, local produce was not available and, to offer tourists a wide range of international cuisine, ingredients needed to be sourced from other countries. Another factor is the higher prices charged by local suppliers. This reason was predominantly given by the managers of three-star hotels. More upscale hotels and resorts did not mention the higher price of locally grown produce as a constraint to purchasing more local supplies. The last constraint was consistency. While highlighting that local products are generally of better quality than imported ones, several interviewees noted it was more efficient and reliable to procure goods through an import wholesaler. So, despite the generally higher quality of locally grown food, actual quality of individual suppliers or batches can vary greatly, and hotels tend not to purchase local produce if it does not meet their quality standard. Interviewees also noted

TABLE 4 Hotel guests' purpose of trip

Purpose of trip	Percentage
Leisure	65.8
Business	12.9
Volunteering/NGOs	12.1
Conference	8.0
VFR	1.2

Note. NGO = non-governmental organization; VFR = visit friends and relatives.

Source: Sample = primary research interviews.

TABLE 5 Bhutanese hotels and resorts' food and beverages expenditures by source

Category	Total (A)	Imported (B)	Local (C)	Imported (D = B/A)	Local (E = C/A)
Food	77.0%	53.8%	23.2%	69.9%	30.1%
Fruit	9.4%	5.9%	3.5%	63.2%	36.8%
Vegetables	12.7%	6.0%	6.7%	47.2%	52.8%
Meat, poultry, and fish	33.9%	24.1%	9.8%	71.2%	28.8%
Processed food	21.1%	17.7%	3.3%	84.3%	15.7%
Beverages	23.0%	11.7%	11.3%	50.8%	49.2%
Total	100%	65.5%	34.5%	65.5%	34.5%

Source: Authors' calculations from primary research interviews.

that imported food lasts longer and that local produce has less variety. Some interviewees noted that it is very difficult to get local produce in bulk.

All interviewees but one professed to be willing to purchase more locally produced food and beverages. The most common reason for wanting to purchase more locally produced food and beverages is that local fruit and vegetables are organic and of better quality. Many interviewees remarked that they did not mind paying a higher price for organic, local produce. These hotel managers, in principle, want to purchase from local farmers. The reasons given for not doing so are two-fold. One is for structural reasons. For one hotel, the main local markets only opened on Saturdays so procuring ingredients on other days necessitated buying imported goods. Further, in Bhutan's tourism model, tour operators and tour guides choose dishes for tour groups, taking the decision away from hotels or tourists. The second reason is that local suppliers have difficulty supplying enough quantity. One initiative the Ministry of Agriculture instituted was to establish a Farmers' Cooperative to ensure a plentiful supply chain. However, this programme failed as supply was not consistent and food and beverage orders could not be fulfilled.

5.3 | Multiplier and linkage analysis

Table 6 shows Bhutan's output multipliers, GVA multipliers, import multipliers, and backward and forward linkage indices for 21 economic sectors, extracted from the Asia Development Bank's Supply and Use Tables (Asian Development Bank, 2012). The output multiplier for the Agricultural, Hunting, Forestry, and Fishing sector is 1.10, below the

average of 1.35, indicating that indirect economic impacts as a result of economic activity in this sector are relatively low. This sector has a high GVA multiplier (0.91) and a correspondingly small import multiplier (0.09). This is to be expected, as agriculture in Bhutan is relatively small scale, with a relatively high level of subsistence farming.

On the other hand, the output multiplier in the Hotels and Restaurants sector is 1.43, meaning an additional 0.43 is generated in economic output for every one unit of economic activity in this sector. This sector's GVA multiplier is lower than for agriculture but still above the national average. Only 0.16 out of every unit produced comes from imports. This may be because a certain proportion of hotels are locally owned and predominantly employ local labour. In terms of the manufacturing of food products, Bhutan has a high import quotient. The import multiplier is almost twice as high as the GVA multiplier for that sector (0.64 vs. 0.36).

The backward linkage (BL) index measures the relative importance of each sector as a demander from other sectors. The Hotels and Restaurants sector is marginally above average compared with those sectors (1.06), suggesting that this sector demands domestically produced goods and services at about an average rate. The forward linkage (FL) index determines the extent to which a sector supplies goods and services to other sectors. The FL index for the Agriculture, Hunting, Forestry, and Fishing sector is above average at 1.11. As there is no hunting in Bhutan and fishing in the landlocked country is confined to subsistence fishing in rivers, the index in this category would primarily reflect forestry and agriculture. As agriculture is aggregated with other economic activities in this category, no definitive conclusion can be drawn about the figure for agriculture on its own. In

TABLE 6 Bhutan's multipliers and linkages

Sector	Output multiplier	GVA multiplier	Import multiplier	BL	FL
Agriculture, Hunting, Forestry, and Fishing	1.10	0.91	0.09	0.82	1.11
Mining and Quarrying	1.19	0.38	0.62	0.88	1.06
Manufacture of Food Products, Beverages, and Tobacco	1.41	0.36	0.64	1.05	0.83
Manufacture of Textiles, Wearing Apparel, and Footwear	1.39	0.51	0.49	1.03	1.14
Manufacturing of Wood, Wood Products, Paper, and Paper Products	1.34	0.32	0.68	0.99	1.10
Manufacture of Rubber and Plastic Products	1.44	0.41	0.59	1.07	1.05
Manufacture of Basic Metals	1.29	0.20	0.80	0.96	1.53
Manufacture of Fabricated Metal Products; Office & Computing Machinery	1.11	0.09	0.91	0.82	0.89
Other Manufacturing	1.39	0.26	0.74	1.03	1.24
Electricity, Gas, and Water Supply	1.23	0.85	0.15	0.91	1.18
Construction	1.83	0.48	0.52	1.36	0.76
Wholesale and Retail Trade; and Repair of Motor Vehicles	1.31	0.93	0.07	0.97	0.74
Hotels and Restaurants	1.43	0.84	0.16	1.06	0.89
Transport Services and Storage	1.75	0.60	0.40	1.30	1.49
Post and Telecommunications	1.24	0.74	0.26	0.92	0.90
Financial Intermediation and Insurance	1.10	0.96	0.04	0.81	1.04
Real Estate, Renting, and Business Services	1.04	0.72	0.28	0.77	0.93
Public Administration and Defence	1.57	0.73	0.27	1.16	0.75
Education	1.25	0.38	0.62	0.92	0.85
Health and Social Work	1.46	0.83	0.17	1.08	0.74
Other Community Service Activities	1.46	0.56	0.44	1.08	0.78
Average	1.35	0.57	0.43	1.00	1.00

Note. GVA = gross value-added; BL = backward linkage; FL = forward linkage. Source: Authors' calculations based on Asian Development Bank, (2012).

Bhutan, over 70% of the country is covered in forests and much of this may come from consumption of forestry products, including for use in Bhutan's vernacular wooden architecture.

Domestic manufacture of food products has a weak forward linkages score of 0.83, indicating this sector does not supply many goods and services to other sectors in the economy. This analysis complements the microeconomic analysis noted above that the value added to agricultural products in terms of food processing is limited in Bhutan.

5.4 | Interviewees' recommendations for improved food linkages

Interviewees provided several suggestions to improve linkages between the Agricultural and Hotels and Restaurants sectors. Some suggested that hotels outside of urban areas could establish their own greenhouses and farms. Even those in the major towns of Thimphu and Paro could grow their own kitchen gardens, and, indeed, several hotels were already doing that. An interviewee suggested that the Ministry of Agriculture could distribute seeds for this purpose. One suggested that increasing urbanization, especially among young people who are moving to the major towns to secure employment, is a reason why farm production is dwindling. They noted that not many people want to work on farms anymore. Many felt a lack of support from the government. They felt the government should support farmers more and encourage the Agricultural sector by providing more training and support for local, small hotels, and training train farmers on how to grow better produce, and what to grow.

Other suggestions to increase linkages involve better communication. One hotel manager suggested to "give local suppliers some ideas about what they should produce, grow, placing orders." Another proposed appointing an agent to source seasonal supply from different parts of the country to better coordinate between the farming sector and the Hotels and Restaurants sector. Another suggested "It would be great if there were a common supplier of vegetables to the hotels as it would be easier and faster," for example, monitoring and sourcing vegetable supplies from the southern parts of Bhutan in the winter while sourcing supplies from the northern parts of Bhutan in the summer. One hotelier remarked:

We should also share more knowledge about best practices, for example on how to decrease certain costs or increase quality. Also technical knowledge like proper water filtering systems is limited for many people. And awareness about preserving the planet; there is so much garbage everywhere, in the cities and nature, really not like the strategy and marketing of Bhutan.

The idea of food fairs was raised by several interviewees, to network farmers and hotels and showcase the variety and quality of Bhutanese food. Several suggested that the Hotel and Restaurant Association of Bhutan, which was founded in 2007 and represents restaurants from small family-owned properties to major convention hotels, should be more proactive. One hotelier opined that there are good ideas and a lot of communication but nothing happens and suggested forming a more informal social club to share ideas and

knowledge about fostering links. At present, hotels support local farmers mostly through personal contacts and networks. One interviewee, through personal relationships with farmers, received a lower rate for vegetables that were going to spoil. One interviewee suggested that guests could request more Bhutanese food. However, for some hotels, the decision is taken out of tourists' hands as the tour operator and tour guides preorder the meals.

An in-depth interview was conducted with the Executive Director of the Association of Bhutanese Tour Operators (ABTO), founded in 2000 and counting 78% of Bhutan's more than 1,000 tour operators among its members. ABTO aims to lower leakages, support organic products, and strengthen linkages between agriculture and tourism, for instance, by running a 2012 workshop between farmers and hotels to explore ways to increase local supply of food and beverages to hotels. One idea was to have hotels purchase food and beverages directly from the farmers, facilitated by the Ministry of Agriculture. The scheme was successful for a short period of time; however, a change in key personnel leads to its cessation. ABTO believes that a proper strategy and engagement with cooperatives on a regular basis is needed, rather than one-off meetings, also suggesting that the Government of Bhutan recognize hotels and restaurants that offer local produce with a Certificate of Appreciation, and could then use this in their marketing to attract tourists concerned with sustainable practices.

The following, concluding section of this paper will seek to synthesize the qualitative and quantitative findings of this research, in order to identify some overall characteristics of economic linkages and leakages between agriculture and hotels in Bhutan and discuss the implications of these insights.

6 | DISCUSSION AND CONCLUSIONS

From the primary research in-depth interviews, we determined that hotels and resorts in Bhutan spend about 77.0% of their food and beverage budget on food and the remainder on beverages. Meat, poultry, and fish is the largest category at 33.9%. Overall, 65.5% of all food and beverages are imported and 34.5% are sourced locally. By category, 69.9% of food and 50.8% of beverages are imported. This means that a significant amount of tourism expenditures is leaving Bhutan in the form of imported food and beverages. Meat, poultry, and fish as well as processed foods are the categories that have the highest leakage rate whereas vegetables has the highest rate of domestically produced food.

From the multiplier analysis using secondary data from the Asian Development Bank, we find that with a backward linkage value of 1.06, only marginally above average, the Hotels and Restaurants sector in Bhutan is hardly exemplary in terms of spreading the economic benefits to other sectors of the economy. As a growing sector, a generator of foreign exchange, and particularly because it brings impacts on Bhutanese society, it should be incumbent upon the tourism industry to optimize the benefits of its earnings to the nation as a whole, circulating its earnings further through the economy and avoiding leakages.

In the tourism food value chain, both Agriculture and Hotels and Restaurants have low import multipliers, whereas the corresponding

figure for Food Manufacture is high, revealing that leakages in this value chain are predominantly in food processing. Indeed, as a developing nation, Bhutan's food processing capability is underdeveloped. Building domestic food processing capacity would allow for Bhutanese agricultural products to be converted into more durable, value-added form that would help alleviate issues of perishability and unreliability of domestic crops. This would also allow for the processing of imported meat and other raw foodstuffs from abroad rather than importing processed foods, reclaiming a link of the value chain for the domestic economy.

A number of factors contribute to restaurants' low use of local foodstuffs. Locally produced food is more expensive and less consistent as it does not benefit from the economies of scale and mechanization that produce imported processed food. Some ingredients are also not made in Bhutan. Managers of four-star and five-star hotels are prepared to pay a higher price for local produce, especially as it is organic. For smaller hotels and the three-star hotels, though, the high prices of local produce are a problem. Several interviewees from smaller hotels mentioned the high cost of doing business in Bhutan, including high wages and rent. Interviewees mentioned excessive bureaucracy in starting and operating a hotel. One commented "Licensing (and) starting a business is time-consuming, lots of red tape." This perception is corroborated by the World Bank's "Doing Business Report" (2017), in which Bhutan is ranked 73rd out of 190 countries, two lower than the previous year. Although not directly related to leakages, these costs and complications divert money that might otherwise be used for local employee wages, the purchase of higher quality local produce, or other measures that could mitigate leakages and add value to the tourism product.

There is little freedom of choice for tourists in Bhutan, with the government and tour operators predetermining nearly all aspects of the itinerary and nearly all spending being accounted for by the fixed daily tariff rather than discretionary spending. It is therefore difficult to gauge and respond to tourists' preferences, or to develop product or service innovations as in a free market. However, it could be anticipated that the affluent, educated, and adventurous tourists who are attracted to Bhutan, as well as the socially conscious volunteers and non-governmental organization workers, could offer a number of opportunities for rethinking of aspects of linkages in the tourism sector. For instance, they may be more inclined than mass tourists or domestic Bhutanese to accept or even prefer a vegetarian diet that would minimize the unavoidable leakages that come with serving meat in Bhutan. They may also be willing to pay a premium for organic food, or for knowing that they are supporting local farmers rather than foreign concerns.

Although the highly controlled nature of Bhutan's tourism industry is a limiting factor in some aspects of development of linkages, in others, it may be seen as an asset, for instance, in the orchestration of the types of programs of national-level coordinated sourcing of domestic food to hotels and restaurants proposed by some interviewees. The goal would be a domestic value chain in tourism, linking (existing but underutilized) agriculture, (currently lacking but crucial) domestic food processing, and (willing but currently constrained) hotels and restaurants, necessitating coordinated policy and planning at the national level.

Many aspects of the tourism value chain in Bhutan can be understood in terms of two factors that are particular to the Bhutanese context: the high degree of tour operator control (and low degree of tourist discretion) over itinerary and in-country purchase decisions and the lack of domestic production of meat in the country due to Bhutanese religious beliefs and cultural norms. Both of these facets represent a desire to maintain and protect Bhutanese cultural values, by carefully containing the movement and behaviour of outsiders and by reaffirming an essential tenet of the national religion, even in the face of increasing development. The development of tourism should not compromise the values that underlie these principles. Rather, protection of cultural values and the enhancement of quality of life can be further promoted by strategic measures aimed at enhancing the tourism value chain, including the implementation of elements of a free market and capacity building in the food-processing sector, which was identified as the weak link leading to leakages.

There are several limitations to this research. Only 19 semistructured interviews were completed for this primary research, in addition to interviews conducted with representatives of the Tourism Council of Bhutan and the Association of Bhutanese Tour Operators, although as mentioned, this does constitute a sample of over 60% of the tourist class hotels in Paro and Thimphu. Future research could be undertaken outside of these two main towns. Another avenue of research could be to examine the same issue from the farmers and other food and beverage suppliers' perspectives. As noted by Garrigós-Simón et al. (2015), little research has been conducted in this area for landlocked countries, so a further task for future research would be to conduct analogous studies for other landlocked developing nations in the region, such as Nepal or Laos, to seek to identify common patterns and issues, and potentially common strategies for addressing these issues.

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