The Economic Impact of Gastronomic Tourism: The Ubud Food Festival

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วัตถุประสงค์หลักของงานวิจัยนี้คือผลกระทบเชิงเศรษฐกิจในบาหลีในช่วงสถานการณ์การระบาดของเชื้อไข้หวัด Covid-19 โดยยกกรณีเทศกาลอาหาร Ubud ในปี 2019 และใช้การวิเคราะห์แบบ input-output เนื่องด้วยการระบาดของ Covid-19 งานเทศกาลโดยส่วนใหญ่ได้ถูกยกเลิกรวมไปถึงเทศกาลอาหาร Ubud ในปี 2020 ประมาณการคร่าวๆ ของผลกระทบที่เกิดจากการยกเลิกงานเทศกาลจาก 54 ภาคส่วนของเศรษฐกิจในบาหลี การศึกษานี้ประกอบด้วย regional output value-added และ income multipliers ผลลัพธ์บ่งชี้ว่าในบรรดภาคธุรกิจที่เกี่ยวข้องกับอาหารนั้น อุตสาหกรรมอาหารและเครื่องดื่มมีค่า value-added multiplier สูงที่สุดสุด และอุตสาหกรรมที่มีค่า income multiplier สูงสุดคืออุตสาหกรรมการขนส่ง เมื่อนำความเชื่อมโยงมาพิจารณาย้อนกลับจะเห็นว่าอุตสาหกรรมที่เกี่ยวข้องกับอาหารสามารถเป็นปัจจัยหลักในการขยายการเติบโตของเศรษฐกิจในบาหลี

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The main objective of this paper is to assess the economic impact in Bali during the Covid-19 pandemic by proposing the case of Ubud Food Festival 2019 with input-output analysis. Due to the outbreak, most scheduled festivals in 2020 have been cancelled, including Ubud Food Festival 2020. Computing the festival impact generated by 54 sectors in Bali's economy, this study constructs regional output, value-added, and income multipliers. The result figured that among the gastronomic tourism-related sector, the food and beverage service industry has the largest number on regional output multiplier, recreational and sporting activities have the largest number on value-added multiplier, and the transportation support service industry has the largest number on income multiplier. Considering the backward linkage and large multiplier numbers of the tourism sector, gastronomic tourism could be the 'key' sector to expand Bali's economic growth.

Field of Study:	Business and Managerial Economics	Student's Signature .....
Academic Year:	2020	Advisor's Signature .....

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Sabrina Yuka Amilia

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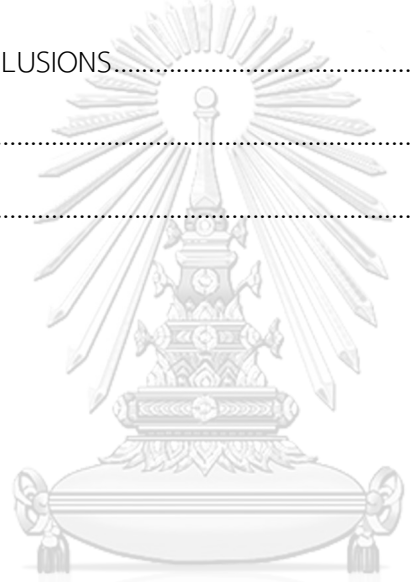

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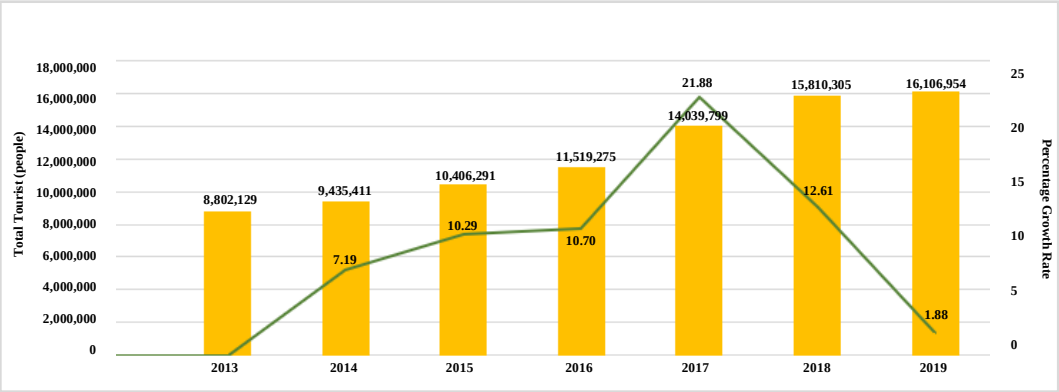
CHAPTER 1

INTRODUCTION

The economic impact analysis is a vast analytic method embracing the most common models for travel and tourism arrangement. In other words, economic impact analysis could trace and aggregate the monetary payments flow within the regional economy by evaluating the income flow of one sector to the other sectors (Tyrrell & Johnston, 2001). The economic impact study applications in travel and tourism determine the effects on income, expenditure, output, or jobs related to tourist destinations, events, facilities, and policies in a specified geographic area. The applications of economic impact study in travel and tourism assign the effects in income, expenditure, output, or jobs related to tourist destinations, events, facilities, and policies in a specified geographic area.

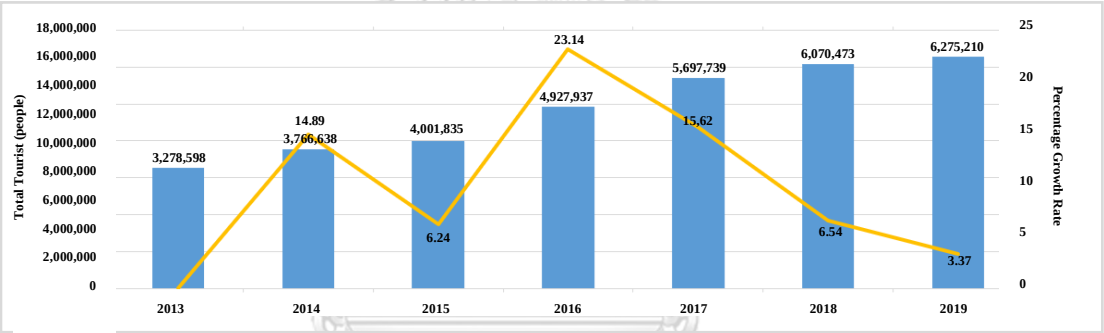
As one of the fastest-growing sectors by contributing to the Indonesian economy in term of production, Indonesian tourist industry welcomed 16.1 million international tourists in 2019, indicating almost two percent growth from 2018. As seen in Graphic 1, the tourism sector indicates annual growth with an average of 9.22 percent increase annually since 2013 to 2019. So does the Province of Bali, which indicating annual increase since 2013 by welcoming 6.28 million international tourists in 2019 and showing average growth of 9.97 percent every year, as denoted in Graphic 2.

From 2013 to 2017, the percentage growth rate of foreigner visits to Indonesia has risen annually however, it got declining in 2018 until this year. Data recorded by Statistics Indonesia in 2019, international tourists allocated their traveling budget on accommodation service, food & beverage, and retail shopping during their visit to Indonesia with the percentage of 38.55, 21.15, and 14.63 from the total expenditure, respectively, as presented in Table 1.



Graphic 1 Total foreign tourists visit Indonesia

Source: Ministry of Tourism and Creative Economy of the Republic of Indonesia (2020)



Graphic 2 Total foreign tourists visit Bali province

Source: Ministry of Tourism and Creative Economy of the Republic of Indonesia (2020)

Tourist expenditure contributes to the Indonesian economy, where the overall impacts rely on how a particular expense is allocated to the different tourism-related sectors (Blake et al., 2003). In 2019, foreign tourists spent around a fifth of their total spending of USD 1,183.43 per visit on food and beverage while they visited Indonesia. Through tourism, people spend their money to travel and seek new experiences. Gastronomy is one of the experiences as over a third of tourist expenditure is allocated to food and beverage (Hall & Sharples, 2003; Meler & Cerovic´, 2003; Telfer & Wall, 2000).

No	Product & Service	Value (IDR billion)	Proportion
1	Hotel & other accommodations	441.65	38.55%
2	Food & beverage	242.27	21.15%
3	Retail shopping	167.60[1]	14.63%
4	Local transportation	159.40[2]	13.91%
5	Travel agent & tour operator	17.76	1.55%
6	Other tourism services	116.95[3]	10.21%
	Total expenditure	**1,145.64**	**100%**

Note: [1] Including expenditure on souvenirs

[2] Including expenditure on domestic flight

[3] Including expenditure on entertainment, health & beauty, and education

Table 1 International tourist average expenditure per visit in 2019

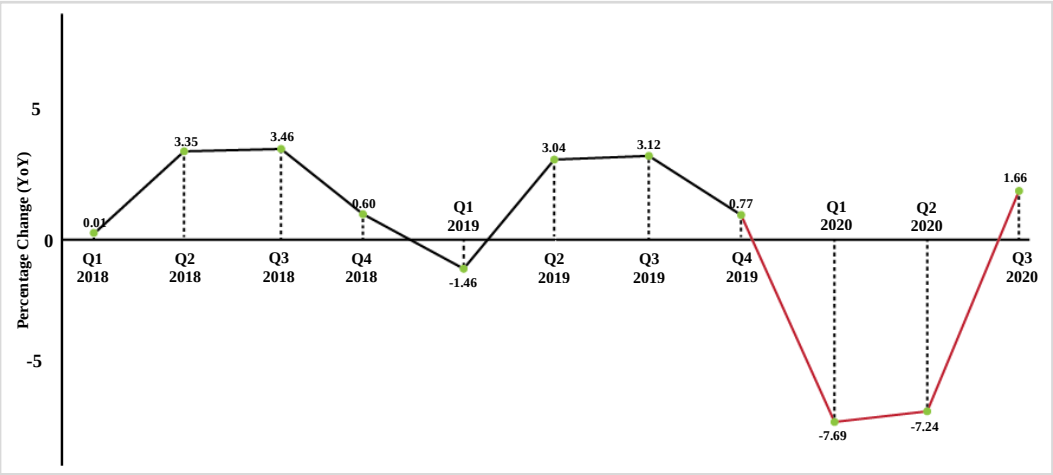
Source: Ministry of Tourism and Creative Economy of the Republic of Indonesia (2020)

This has grown considerably and has become one of the most dynamic and creative tourism segments, so-called gastronomic tourism. Business in the culinary sector has put a new perspective to one of the most contributed provinces in Indonesia GDP through its tourism sector named Bali Province. A small district in Bali Province that is well-known for its traditional dances, crafts, palaces, and nature has expanded its cultural tourism accordingly turned its district, Ubud, into Indonesia's first gastronomic destination endorsed by World Tourism Organization (UNWTO) (Pitanatri, 2016). Mananda & Dewi (2018) found in 2016, the TripAdvisor website suggested 516 restaurants in Ubud district, and as per April 2020 TripAdvisor website mentions 985 restaurants located in Ubud district. This amount has not included *warung* (the small and traditional eateries) where locals can easily find it nearby or inside conventional markets. Putra et al. (2018) mentioned that Ubud gastronomy is influenced by Indonesian triangle gastronomy comprised of culture, history, and food. Most local restaurants in Ubud own their special food preparation technique and service as Ubud community has strong culture and tradition while preparing dishes for religious ceremonial activities (Yanthy, 2018). Ubud district offers typical Balinese cuisines, namely *ayam betutu* (Balinese roasted chicken), *babi guling* (roasted suckling pig),

and *sate lilit* (Balinese fish satay) to modern organic food cooked with local ingredients. Tourists could easily get those dishes in traditional markets, *warung*s, *café*s, as well as Michelin star restaurants.

However, unfortunately, industry development does not always work smoothly as it will deal with a number of challenges in the future, so does the tourism industry. Von Bergner & Lohmann (2014) stated that the tourism sector faces plenty of challenges that have not been a part of normal business in the shape of global financial crisis, political issues, terrorism, and natural disaster. A crisis, hereafter, portrays an occasion that leads to a failure of adapting to some changes (Ritchie, 2004), and the Covid-19 pandemic, which was declared by the WHO on March 11, 2020, is considered as a crisis since it ceased people mobility at the global scope to community scope, enforced several countries to close the border, led to a sluggish economy due to less or even terminated the production and distribution process of products. The swift and massive shock of the coronavirus pandemic also impacted Balinese economy. Data[1] of Balinese economic growth during the pandemic at current price released by Bali Statistic Bureau on November 5, 2020, as shown in Graphic 3, the red line shows the outbreak has affected Bali province economic growth since the beginning of 2020 at the current price in Q3 that shrinks as much as 9.39 trillion IDR or minus 12.28 percent compared to Q3 2019 year-on-year (hereinafter referred to as "YoY"). However, on the other hand, compared to Q2 2020, the local economic indicates a positive growth from -7.24 percent to 1.66 percent in Q3 2020 during the pandemic. The growth is generated by the reopening gate of domestic tourism in July 31, 2020 as the government tourism office of Bali province regulation under the instruction of Balinese governor.

[1] No. 68/11/51/Th. XIV



Graphic 3 Balinese economic growth during the pandemic at current price

Source: Bali Statistic Bureau (2020)

The province finds today's situation is challenging since the Covid-19 case in Bali is at the highest level on January 21, 2020 as the impact of reopening domestic tourist gate. Bali Provincial Health Office as per January 23, 2021 has recorded 23,472 Balinese with confirmed Covid-19 followed by 628 deaths and a total of 19,899 Balinese patients have recovered from the disease. Available data reported by the Ministry of Tourism and Creative Economy of the Republic of Indonesia in January 2021 points that an average 83.26 percent decline in international tourist arrivals in 2020 compared to the arrival in 2019. Drawn from the same document as Bali's GRDP at basic price previously, local tourism-related enterprises encountered the highest decadence of -9.11 percent (YoY) includes, but not limited to, accommodation service as well as the food and beverage industry. Concerning the province's expenditures, Bali Province's exports fall to -7.78 percent (YoY), investment declines to -0.48 percent (YoY), and consumption for non-profit institutions was 0.07 percent.

Tourism was the sector that was hit hardest by the pandemic's effects, with millions of employments at risk in one of the most labour-intensive industries of the regional economy. At least until 2021, Bali does not have any plan to reopen its

border for international tourists and instead focuses on domestic tourist by opening some tourist attractions around the island. The PSBB (national large social restrictions) as well as the curfew applied in every Balinese district led to the economic distress. Bali Statistic Bureau also reported 3,3361,702 Balinese were unemployed by February 2020. This amount consists of 77.08 percent of the working-age population and 22.92 percent of the non-working-age population. Another consideration that makes tourism sector in Bali need more time to recover is that 80% of tourism-related businesses are small and medium-sized enterprises affected directly. This might impact the local community that overly relies on tourism as the primary income.

Conducting the empirical research in Bali, Indonesia is thus preferential interest, allowing for an assessment of how the tourism sector contributes to Bali's economy during the Covid-19 pandemic. The outbreak of this pandemic has changed Balinese economic, social, and political structures since people attempt to deal with the 'New Normal.' A number of policymakers and scholars assess further macro-level impacts to influence people in rural and urban areas. Nevertheless, the range and impacts analyzed by the existing studies related to Bali's tourism industry during the pandemic are still beyond fully understood, particularly from an economic perspective.

Objectives of study

Due to the shortage of systematic comprehension on economic impact assessment on tourism sector that potentially provides insights and lessons for policymakers to improve and adjust the existing tourism policy options, particularly at the national level during the crisis, to achieve the research objective and provide guidance for this research analysis, two objectives were formulated and followed by the research question. Firstly, this study aims to enhance the understanding of tourism sector contribution, especially gastronomic tourism, to Bali's economy with the propensity to encourage sustainable development in terms of creating economic impacts stimulated by the tourism products and services. This could be a booster to

regenerate heritage restoration as well as raise local community identity. Due to the annual increase in visitor size, the tourism sector is indicated to support local communities. Bali Province is quite popular with its nature and culture for tourist attractions. This is, therefore, highly necessary for the province to gain a return on its investment to the tourism sector in terms of local communities and local enterprises that attempt to attract more tourists to Bali by running their culinary and other businesses. However, the emergence of a crisis cannot be avoided along the way. Thus, the second objective indicates the economic impacts of the tourism sector during the crisis through the Covid-19 pandemic case would indicate whether the local community's investment will be worthwhile. This study will review gastronomic tourism's economic effect by highlighting the number of tourists who visited the Ubud Food Festival, their average spending during their visit, and regional multipliers generated by the tourism sector. Therefore, the research question which would guide the thesis is exhibited the direct and indirect impacts of gastronomic tourism towards Bali's economy generated by the Ubud Food Festival through 54 sectors in the economy by constructing regional output, value-added, and income multipliers during Covid-19 pandemic. United Nation (March 2020) mentioned at the launch of the global humanitarian response plan for the Covid-19 that the pandemic's impact scale is unprecedented. Research has analyzed the recovery in social and economic sectors worldwide might take more than a decade.

Contribution of study

This study can be considered as 'updated evaluation' to provide contributions in two ways. First, the updated research data will focus on providing a reporting analysis and impact of current tourism industry on Bali's economy during the Covid-19 pandemic where the Ubud Food Festival 2020 has been canceled. Secondly, the constructed Input-Output model will be formed into tourism-related information that can improve the regional statistical system and influence tourism policy design in the middle of the crisis. Simple output multipliers are, therefore, employed with the aim to assess the indirect economic effects.

CHAPTER 2

LITERATURE REVIEW

The word 'gastronomy' is well described as a "compulsory consumption of gastronomic experiences by tourists" (Fields, 2002). Scarpato (2002) found that the origin of the 'gastronomy' term first appeared in the last two centuries on a France poem title named *La Gastronomies, ou l'homme des champs table*. In 1835 this word became more popular after being included in the French Academy's dictionary as "the art of good eating." Ritchie & Zins (1978) listed that food is one of the cultural tourism fundamentals, where food implies a culture representative. Gastronomy, furthermore, presents a new concept to accomplish a sustainable tourism development whilst approaches an ingenious section under cultural and heritage tourism studies (Everett & Aitchison, 2008). Local food is a primary segment of a destination's aspects, gaining multiple attractions as well as the entire tourist experience (Symons, 1999) and turning it into a fundamental of tourism production and consumption. The role of tourism in a country might have increased or decreased over the years, but it has an overarching impact on economic growth. Through tourism, people spend their money to travel, seek new experiences, as well as businesses. Food is one of the experiences. As a strong tourist attraction, gastronomy could gain the destination value and competitiveness. A gastronomic destination can be a special element of a place's brand image as well as create uniqueness, both at the regional and national levels (Du Rand & Heath, 2006; Henderson, 2009; Richards, 2012). As one of the most popular varieties of festival types, food festival has rapid growth as tourist attractions in recent years (Çela et al., 2007; Crompton & McKay, 1997; Thrane, 2002). The food festival, therefore, is noticed as an ideal creative destination for the host region to enhance more assets to tourism market competitiveness (Prentice & Andersen, 2003).

The tourism sector induces various economic advantages to both developing and developed countries. In developing countries, in particular, one of the main

objectives to restrain and encourage their tourism industry is the expected economic growth (Surugiu, 2009). Tourism, moreover, worth of the country's foreign revenue earnings, employment effects, and commencing the infrastructure development (Cooper, 2012; Forsyth, 2006). Tourists spend their budget on accommodation, food and beverage, recreational activities, transportation, retail shopping, and other products and services while traveling to a destination. These expenditures directly impact local tourism enterprises and the regional economy that could be examined by income for the wage and tax payment. In order to satisfy tourists' needs, these enterprises require to invest in goods and services using their direct incomes. A rise in visitors' amount makes the businesses spend their incomes on these investments and accordingly create an indirect effect through employment and wage for the other enterprises running in the region who supply the tourism businesses above. Therefore, the economic impact assessment on tourism is considered for region or community planning and development (Surugiu, 2009).

Gastronomic tourism, as Gaztelumendi (2012) stated, could address environmental and cultural concerns in appropriate economic arguments. The job opportunity and revenue generation usually form economic benefits (Crompton et al., 2001; Delpy & Li, 1998; Gamage & Higgs, 1997), and the non-market benefits are shaped by the positive image reinforcement between local food and local community as well as the improvement in local authority reputation while hosting the festivals (Jeong, 1998). Therefore, Tikkanen (2007) recognized gastronomy as a part of local culture experienced and exposed by the tourists, which shapes consumption patterns and the local economy and as a marketing element for tourism. Founded in 2015, the Ubud Food Festival (hereinafter referred to as "UFF") is a big annual project of a not-for-profit organization named Yayasan Mudra Swari Saraswati. The foundation has a mission to enrich the lives of Indonesians through community-building and cultural programs. With over 100 local and international chefs, restaurateurs, farmers, food writers, and culinary stars, the three days of cross-

cultural culinary festival highlighted Indonesian food as the headliner. Every year, this festival comes up with a playful and invigorating brand identity to celebrate the wealth of archipelago's culinary heritage and appreciate Indonesia's existing food industry. Unlike most food festivals, UFF is not just about eating foods but also creating opportunities for their audiences to learn many different aspects of the food industry, including waste management and food sovereignty. The UFF hub is annually based at *Taman Kuliner* – the 'Culinary Garden' on Jalan Raya Sanggingan, five minutes' drive from the district center. Ubud Food Festival 2019 was selected to make a significant contribution to the local community since more than 15,000 visitors were welcomed in 2019. Over four-fifths of them was Indonesian, who came from Bali, Jakarta, Bandung, Yogyakarta, Surabaya, and Papua. The remaining visitors were foodies from Australia, Southeast Asia, and beyond. There is an increase of approximately 30 percent visitors annually since 2015, as presented in Appendix A.

The economic impact assessments are a common practice in response to many regional project developments. The analyzes propose a rule-based as well as a transparent measurement of the economic significance of several operations or industries in an economy (Tunny, 2019). In the opinion of D'Hernoncourt et al. (2011), economic impact analysis is a partial analysis in which this finding will not incorporate all economic impacts and will be area specific. Multiple models have been developed to compile the economic impacts of tourism, of which the most commonly used methodologies are Input-Output (I-O), Social Accounting Matrix (SAM), Computable General Equilibrium (CGE), and Tourism Satellite Account (TSA) models. Akkemik (2012) highlighted that these models, with their strengths and boundaries, come under multisectoral modeling appropriate for certain research questions and objectives. I-O model is conducted to estimate the direct, indirect, as well as induced impacts (Frechtling, 2011), yet, this model requires some assumptions to support the analysis. SAM model aims to capture the significance of the tourism sector. The CGE model seeks to evaluate supply and demand shock changes in response to a project (Oosterhaven & Fan, 2006). However, this model need a longer period of time to construct compared to the others. It requires

detailed data, which rarely available and expensive primary data. The TSA model shows the I-O framework's extension (Diakomihalis, 2007; Smeral, 2006) and measure only the direct impact of tourism in a broader region than the others. Like the SAM model, TSA needs primary data, which is also costly. Hence, there is no fundamental acceptance to conduct which economic model applied for the economic impact assessment, specifically tourism.

When tourists visit a particular area, there is an increase in this area's economic activity due to tourist activities that directly and indirectly create more demands for local goods and services. Estimating economic impact aims to measure the changes in sales, income, tax revenues, as well as employment from tourism activities. Nevertheless, the negative impacts on the environment, culture, social, or economic that might encourage emergence within tourism activities would not be counted as part of this study. The economic impacts in tourism activities classified by Tribe (2011) are differentiated into primary and secondary effects. The significant input to the economic impact analysis of tourism activity usually addresses to tourist spending in the area, the portion of sales generated by tourism-related local businesses, the income generated by the tourism industry for households and local enterprises, the employment in the area, and tax revenue supported by the tourism sector. The primary effect contains the direct effects of extra demand occur within main tourism activities, e.g., tourist spending on lodging, food and beverages, recreational, transportation, and retail trade. The secondary effect makes the economic impact assessment more accurate since tourism will acknowledge the linkage of most sectors in the economy as well as how dependable this region to good and service imports. Indirect and induced effects are included in the secondary effect. Multipliers assess this through computing the leakage of new spending in the area (Janeczko et al., 2002). The source of leakage, for example, could occur from taxation, savings, foreign ownership, and investment, as well as the expenditure on goods and services, not sources from that area. Indirect effects refer to the additional demand for goods and services by industries that provide tourist needs in a target region, e.g., the extra food ingredients that restaurants require to purchase, the extra inputs on supply, and labor for hotels need to serve their guests, and so forth. While

induced effects generate after tourism's direct and indirect effects emerging due to an increase of demand for goods and services in a specified region, e.g., the labor whose jobs are supported within the value chain and spend their incomes on local goods and services in addition to that assisting the other economic activities. The most common multipliers employed to analyze the economic impact are the output, income, employment, and value-added multipliers (Hughes, 2018). Stynes (1997) constructed the simple formula to estimate the economic impact of tourism as follow:

$$Economic\ Impact\ of\ Tourism = Number\ of\ tourists\ x\ Average\ spending\ by\ visitor\ x\ Multiplier$$

This formula suggests three procedures to construct the model: (1) estimating the change in number and type of tourist who visits a region due to a policy, (2) analyzing the average levels of tourist expenditure (on several sectors) in a region, and (3) assessing the changes in the expense of regional economy model or multipliers to determine the secondary effects of tourism. Total visits, average spending by the visitor, and an aggregate sales multiplier are inserted on a simple worksheet to analyze the direct and total sales effects of visitor expenditure. Sales effects are converted to income and employments using simple income ratios to sales and employment to sales. Likewise, the tax effects of visitor expenditure can be examined through the local tax rates to sales assessment.

There have been extensive researches dedicated to depicting the essential use of Input-Output analysis as a tool to estimate the economic impact of special events and festivals within a specified geographic area. Herrero et al. (2006) focus on partial aspects, such as festival and visitor expenditures, yet essential in terms of economic impact generated by Salamanca 2002, the European Capital of Culture conducted in Spain. In this study, Herrero et al. utilize the Input-Output analysis and derive the multipliers from the I-O table to assess the overall spending impact on the event both in regional and national economies. Firstly, they differentiate sectoral multipliers, the construction in terms of tourism facilities and equipment spending as well as service sectors in terms of cultural spending. The distribution of the expenses

then splits into direct, indirect, and induced expenses. Direct expenses are generated from both festival construction and cultural expenses, while indirect expenses are created by tourists and visitors who visited different cultural events drawn from a basic survey of this study. Induced expenses are obtained from the multipliers of both local and national expenditures which has been provided by Castilla y León Regional Statistic Bureau. From the expenditure on equipment and facilities aspect, Salamanca 2002 spent 120,933,177 EUR and generated overall economic effect of 266,665,881 EUR. Meanwhile, the expenditure on the cultural aspect of the festival (direct + indirect effects) was 278,844,583 EUR and gained overall economic effect of 434,921,216 EUR. In short, the overall economic impact (sum of cultural as well as equipment and facilities spending) of Salamanca 2002 was 701,587,097 EUR. Thus, this study considers that the economic impact is the outcome of cultural planning and visitor's expenditure and the festival organizer's effort to invest in the city's construction facilities. Salamanca 2002 has demonstrated the source of cultural richness in Spain as well as contributed to regional and national economies.

Çela et al. (2007) study the economic impact in Northeast Iowa's rural communities towards 11 community-based food festivals. Their study aims to develop a 'sense of place,' generate economic benefits, as well as assist the tourism development at a community level. Furthermore, the study will guide sponsors to assign their support level according to the event's financial profit. Attendance data obtained through a questionnaire contained four-part questions. The first part asks about visitor travel characteristics, including the trip purpose, source of festival information, length of stay in the area, and accommodation type. The second part gathers visitor spending patterns on several sectors, namely accommodation, restaurants, groceries, transportation, festival admissions, as well as visitor willingness to pay more local food at the festival. The third part asks the participant's motivation and satisfaction with the food, festival, and overall visit. The last part of the questionnaire asks for visitor demographic data, including their age, gender, education level, income, and residency. To assess the economic impact of these local food festivals, Çela et al. utilized the IMPLAN software to find the estimated effect of visitor spending on total value transactions, the whole level of personal

income, and the number of employments in Northeast Iowa. The result shows that the total economic impact from 22,806 festival visitors who participated in surveys generates 2.6 million USD in terms of sales or output, 1.4 million USD on personal income, and 51 jobs within May to October 2005 with output, income, and employment multipliers are 1.61, 1.65, and 1.29 respectively. Thus, from the questionnaire, this study finds that the festival attendances were middle-aged, college graduates, and affluent who got the festival information by word of mouth.

Bracalente et al. (2011) employed Input-Output analysis to assess the economic impact of the cultural event named Umbria Jazz music festival held in Perugia, Italy. The festival has been conducted annually in July for over 35 years however, the study refers to the festival in the year 2007 only and does not analyze the comparison to the previous and following years in terms of cost and revenues. Bracalente et al. assess this festival's relevance with I-O analysis involved in the number of attendances who visited various admission-free concerts within the Umbria Jazz music festival 2007. The population of interest in this study was interviewed and separated into a couple of subpopulations: those who participated only in free concerts and those who participated in at least one charged concert. Another subpopulation is detached by visitors' residence, whether they come from Perugia Province or outside Perugia Province. Two components of expenditure were then employed to estimate the festival economic impact: expenditure of visitors and the event's production. This study applied the I-O model, which includes endogenous consumption and a bi-regional framework then, constructs the model with IRPET software. Three particular highlights summarize the research. Firstly, the case study shows local supply availability to specified services for the event production needs. Furthermore, the festival contribution significantly explains that half of the overall festival’s economic impact contributes to Italy and not the province of Perugia only. Secondly, the economic effect generated by the Umbria Jazz music festival is beneficial for the local community, and the computed multipliers confirm the proper use of resources that support culture by national and local institutions. Hereinafter, the measurement is able to be a reference to allocate public resources to future cultural events as well as construct collective governance

to develop positive effects in the local economy. The last highlights are linked to the first and second aspects where the lack of public financial resources due to the global recession between 2007 and 2011 could pressure the government (national and local) in justifying the budget for conducting the next cultural events.

Shuib et al. (2013) determined the economic impacts generated by the Rain Forest World Music Festival 2009 (RFWMF2009) in Santubong, Sarawak, Malaysia. This 3-day festival is annually organized by the Sarawak Tourism Board. During the festival that is located approximately 25 kilometers from the main city of Kuching, numerous cultural programs and activities are provided with traditional music workshops and performances as the highlight. To estimate the economic impacts in terms of income, employment, and tax revenue to the local community, this study analyzes the visitors spending patterns on festival facilities and services, as well as examines the character of the visitors through a questionnaire with 300 respondents. In this study, Shuib et al. employ the Input-Output framework to determine the multipliers, then combine with a simple Money Generation Model to compute quantifiable economic benefits in the region. Each Malaysian Ringgit (MYR) of direct sales to festival visitors has increased the local economy by MYR 0.30 (output multiplier = 1.30). RFWMF2009 created MYR 7.44 million in total sales effects, MYR 0.63 million in tax revenue through MYR 3.35 total income to the local government, and 117 full-time as well as part-time employment to the local community.

Rigorous literature reviews on multiplier analysis of tourism's economic impacts are presented in Fletcher (1989) and Archer & Fletcher (1990), classified into three categories. First, it applies the common I-O model to assess the economic impact of tourism in specific regions or countries. Second, studies are concerned with methodological issues of Input-Output analysis that define the I-O framework's drawbacks and practical limitations. The last one, some studies modify the standard Input-Output model for different purposes, such as assessing the capacity constraints in the productive sectors, cost, and benefits on tourism, or the opportunity costs of resources.

Input-Output Model Framework

I-O table based on Glasson (1978) format is constructed by a matrix "n x n" dimension in which is split into four quadrants, and each of them describes a certain correlation. As shown in Graphic 4, the symbols inside the brackets present the matrix size (ordo) within its quadrant. The first symbol indicates the number of rows, and another symbol indicates the number of columns.

Quadrant I (n x n)	**Quadrant II** (n x m)
Quadrant III (p x n)	**Quadrant IV** (p x m)

Graphic 4 I-O table framework

Quadrant I (Intermediate Usage) is the I-O model principle and comprises the matrix of intermediate demands. This quadrant indicates the transactions on intermediate sales and purchases of goods and services among sectors.

Quadrant II (Final Demand) is usually taken over by households, regional and national government consumptions, investments, and exports. This quadrant is endogenous.

Quadrant III (Primary Inputs) includes each sector's requirements for gross value-added or primary inputs (i.e., labor, capital, skill, land) of which all the energy and fund needed for producing a product beyond intermediate inputs.

Quadrant IV (Primary Input - Final Demand) shows the feedback received by primary inputs that are distributed to the final demand. In this sphere, no transaction is denoted as only a few market transactions are notified. Quadrant I, III, and IV are exogenous spheres.

From \ To			Intermediate Demand 1	Intermediate Demand 2	Intermediate Demand 3	Final Demand	Total Output
Intermediate Input	Production Sector	1	X_{11}	X_{12}	X_{13}	F_1	X_1
		2	X_{21}	X_{22}	X_{23}	F_2	X_2
		3	X_{31}	X_{32}	X_{33}	F_3	X_3
Primary Inputs			V_1	V_2	V_3		
Total Input			X_1	X_2	X_3		

Table 2 General view of I-O table

The given I-O table matrices are differentiated by their characteristics and transactions. Table 2 illustrates the general view of the I-O table in an economy containing *n* production sectors, namely sector 1, 2, ... *n*. Producing output X1, sector 1 needs inputs from sector 1, 2, and 3 as much as X_{11}, X_{21}, and X_{31}. The required primary input is V_1. The numbers inside horizontal rows represent how the outputs of a sector are allocated to fulfil intermediate demand and final demand. The numbers inside vertical columns denote the usage of intermediate input as well as primary inputs provided by the other sectors for another sector's production activity. Finally, the total output must be equal to the total input.

The linkage concept is widely used in the basic planning strategy of economic development by analyzing the intersectoral linkages in an economy. Backward linkage (BL_j) indicates the linkage among sectors in their purchase of total input used for their production activities. In other words, it exhibits the effect of the target sector towards the other sectors, which partially use that target sector's output per unit of total demand increase. Forward linkage (FL_j) shows the linkage among sectors in their sales of total output that has been produced. This linkage emerges due to the effect of the target sector towards the other sectors, which partially provide intermediate input for that target sector per unit of the total increase. The formula to compute the linkages refers to Bulmer-Thomas (1982), as shown below:

$$BL_j = \frac{1/N \sum_i w_{ij}}{1/N^2 \sum_i \sum_j w_{ij}}$$

This, $BL_j > 1$ define above average linkage. Nevertheless, the index presumes linkages are equally distributed in many sectors. Considering that linkages are devoted in a few sectors can be calculated by employing the coefficient of variation formula:

$$BL_{vj} = \sqrt{\frac{1/(N-1)\ \sum_i (w_{ij} - \frac{1}{N\sum_i w_{ij}})^2}{1/N\sum_i w_{ij}}}$$

The lower amount of $BL_{vj,}$ the more even is the stimulus among sectors in the economy. Forward linkage is computed as the formula below:

$$FL_j = \frac{1/N\ \sum_i b^*_{ij}}{1/N^2\ \sum_i \sum_j b^*_{ij}}$$

b^*_{ij} denotes the total (direct and indirect) increase of using sectors' output due to a unit rise in supplying sectors' output, as the opposite of w_{ij} that represents the impact of change in final demand. A high forward linkage emerges if $FL_j > 1$. The given coefficient of variation formula will be:

$$FL_{vj} = \sqrt{\frac{1/(N-1)\ \sum_i (b^*_{ij} - \frac{1}{N\sum_j b^*_{ij}})^2}{1/N\sum_j b^*_{ij}}}$$

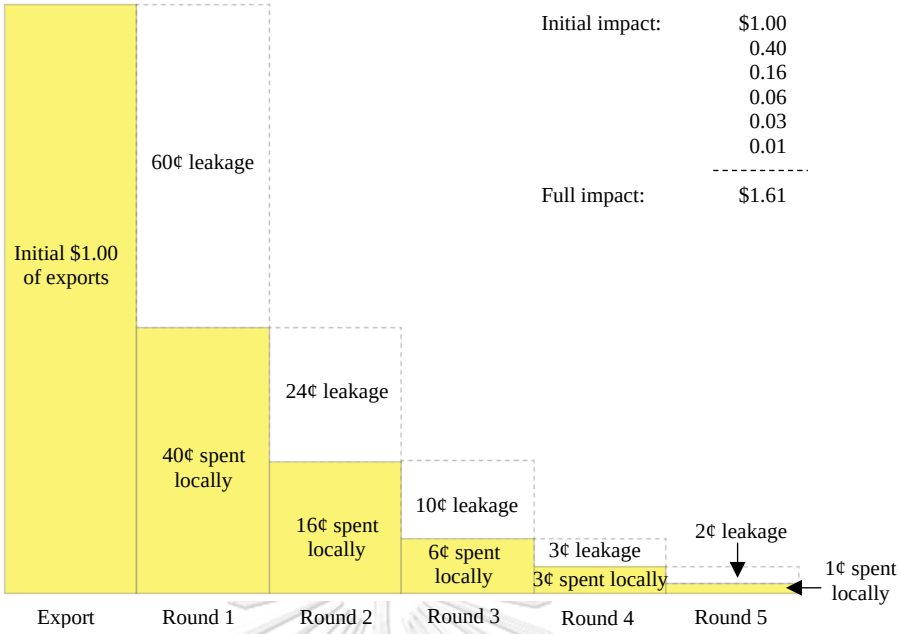
According to this concept, Daryanto & Hafizrianda (2010) found that the growing size of industry could stimulate the growth of other sectors. The direct linkages among economic sectors in intermediate input purchase and sale are represented as technical coefficients. The direct and indirect linkages can be estimated from the Leontief inverse matrix.

Multiplier Analysis

The Input-Output multipliers summarize the measurements constructed for estimating the total impact of all sectors in a change of demand for an output of a

sector in an economy (McLennan, 1996). For instance, a new manufacturing facility or a rising number in exports by the local business are economic changes that could generate ripple effects in economic activities, thus the multipliers estimate the impact of these new exports as well as the ripple effect activities' result. These multipliers portray the average effect instead of marginal effects, therefore do not measure the economic scale, unused capacity, or the change in technology. The multipliers are built from the I-O tables. Due to the large data amount and complexity, I-O tables are usually compiled within three years or more after the reference period. Indonesia Statistic Bureau constructs the I-O table every ten years, and not all the provinces compile their regional I-O table. As McLennan believed, the latest I-O tables can be used even though it might be a few years old, it is still reliable as the change in technology does not happen rapidly in most sectors and gains reasonable results.

Hughes (2018) considers the multiplier concept as round-by-round spending. Graphic 5 shown the concept between multipliers and some more rounds of spending. A dollar is gained into a local community from something which has been sold outside the local community (commodity export sales) hence, this dollar generates an extra local expenditure. The figure presents any sales outside the local economy; the leakage rate to the outside region is 60 percent, and the re-spending rate for goods and services within the local community is 40 percent for each turnover. The businesses and individuals who receive this 40 percent ($1 x 0.40 = 40¢) spend 16 cents (40¢ x 0.4 = 16¢) within the region, while the remaining 24 cents (40¢ x 0.60 = 24¢) is spent on inputs from outside region. Of the 16 cents, there are only 6 cents is re-spent locally, and so on. The process keeps on going until there is no local money left to be re-spent. The total of money generated by local businesses and community as the result of initial $1 in extra export earnings is $1.66. Summing up overall rounds in the process, hence the economic multiplier will be 1.66.



Graphic 5 Multiplier process

From *A Primer in Economic Multipliers and Impact Analysis Using Input-Output Models*, by D. Hughes, 2018, https://extension.tennessee.edu/publications/Documents/W644.pdf.Copyright 2018 by D. Hughes/UTIA

The general I-O model used to compute multipliers is the demand-side of the I-O table, which is determined by the demand for its outputs. The aim of employing the demand-side model is to estimate direct, indirect, as well as induced impacts in an economy and grasp the differences between certain types of multipliers in each category. The direct effect of visitor expenditure on the regional economy could be simply enforced as mostly involves a comprehensive sampling procedure. Assessing the indirect effect can be more demanding since obtaining the appropriate multipliers is mandatory to organize a reliable and sufficient study. Assessing the impact on regional income and employment, I-O model constructs some multipliers and provides the linkages among sectors, personal income, as well as total employment (Mazumder et al., 2009).

Output is the basis multiplier of the other derived multipliers. The output multipliers describe the total value of production by all domestic sectors in an

economy required in order to produce one extra million Rupiah's worth of final demand for that sector's output. Therefore, if an output multiplier of a sector is 2.50, it means for every million Rupiah of production in this sector, IDR 2.5 millions of activity is created in the local economy: a total of original Rupiah (IDR 1.00 million) and an additional IDR 1.50 million. The first requirement for an extra million Rupiah's worth of a given sector's output is named the initial output effect. The amount of output needed from all sectors of the economy in order to produce the initial output effect is called the first-round effect. The first round effect can be estimated by deriving a table from the flow table by dividing every column by Total domestic input at the basic prices of that sector (the column total) to construct Direct requirements coefficients that analyze the advantage of the backward linkages.

The coefficients in a given sector's column indicate the amount of added output required from every sector to produce an extra million Rupiah's worth of output from that sector. The combined effect of the initial effect added by all the production induced rounds of extra output are named the simple multipliers (McLennan, 1996). The simple multipliers can be computed by deriving the first rows and columns in the Direct Requirements Coefficients table and form the A matrix, then set up an Identity matrix with similar size to the A matrix dimension to gain a new Leontief's matrix (I – A), accordingly calculate the Leontief's inverse matrix $(I - A)^{-1}$ to build the column total. The next step is assessing the effects of second and subsequent rounds in induced production by calculating the industrial support:

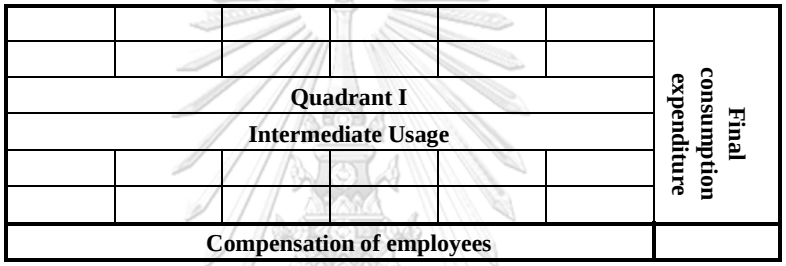
$$\boldsymbol{Industrial\ support\ effects = simple\ multiplier - initial\ effects - first\ round\ effects}$$

as well as calculating the production induced effects:

$$\boldsymbol{Production\ induced\ effects = first\ round\ effects + industrial\ support\ effects}$$

The household industry receives wages after production work and spends this income on goods and services. The wages are denoted by the matrix multiplication of Compensation of employees row and the Consumption by private households

column. It is showed in the Final consumption expenditure column, as shown in the flow table. The induced production of extra goods and services in response to private fine consumption expenditure is portrayed as the consumption induced effects. Thus we can calculate a new multiplier set called the total multipliers by summing up the initial effects, the production induced effects, and the consumption induced effects. The total output multipliers are computed by assigning an Identity matrix with the same size as dimension of A matrix added by the Compensation of employees row and Final consumption expenditure column, thus a new framework matrix called B matrix is build-up, as shown in Graphic 6.



Graphic 6 The matrix B framework

Source: McLennan (1996)

The Leontief's inversed B matrix, $(I\text{-}B)^{-1}$ or symbolized as B* is built from the first six rows and columns of the B matrix include the totals of the columns. This is called the total output multipliers. Then, the consumptions induced effects is computed as follows:

$$\boldsymbol{Consumption\ induced\ effects = total\ output\ multiplier + simple\ multiplier}$$

The second multiplier is the income multiplier. It indicates the increase in the total value of employee's income required to fulfill a million Rupiah's worth of final demand for the target sector's output. An income multiplier of 2.50 exhibits that for every million Rupiah of Compensation of employees in a certain sector, another IDR 1.50 million of employee's income is created in the local economy. After estimating the household coefficients in Compensation of employees row in Appendix E, these

are the initial household income effects, or denoted as the vector *i*. Part of income multipliers can be computed by employing matrix multiplication function as follows:

$$\boldsymbol{First\ round\ income\ effects = i * A}$$

$$\boldsymbol{Simple\ income\ multipliers = i * (I - A)^{-1}}$$

$$\boldsymbol{Total\ income\ multipliers = i * B^{*}}$$

The remaining income multipliers can be computed in the same way as the corresponding output multipliers.

The value-added multipliers indicate the initial increment in output utilized from a sector and the total increase value-added by all sectors. A value-added multiplier of 2.50 shows that for every million Rupiah of direct value-added in the target industry, another IDR 1.50 million of value-added is created in the local economy. The interpolation in value-added bears with an increase in the gross domestic product (GDP) as the GDP is established by the sum of value-added and net taxes as followed formula:

$$\boldsymbol{GDP = Value\ added + Net\ taxes}$$
$$\boldsymbol{= (Output - Intermediate\ inputs) + (Taxes - Subsidies\ on\ products)}$$

To compute value-added multipliers, the vector *h* (the Value-added row) from the direct requirements table is required that shows the initial effect on the excess of value-added in response to output's direct increase by a million Rupiah. Hence, this vector *h* is multiplied by Leontief's inverse matrix as follows:

$$\boldsymbol{Simple\ GVA\ multipliers = h * (I - A)^{-1}}$$

The employment multipliers portray the total jobs created through an increase in initial output. If an employment multiplier is 2.xx, it means that every direct job generates 2.xx jobs in the total economy: the original job (1.00 job) and 1.xx additional jobs. This multiplier is not obtained from the I-O table elements, like in output and income multipliers, as the I-O table does not include the employment-related elements indeed. Adding a new row to put the total amount of employment in a region or country in the I-O table requires employment

coefficients, which can be derived from dividing each number of employment in a given domestic sector by the total output generated by that domestic sector.

The previous empirical studies regarding the economic impact analysis tend to apply a common methodology, the Input-Output model, even though there are certain diversities in the application as it depends on the flows, agents, as well as tools utilized in the study. Those studies emphasize Input-Output analysis to calculate the multiplier effects and conduct visitor surveys. The visitor survey is commonly employed by researchers as it allows visitors to share their spending patterns. Therefore, the survey also provides demographic questions that lead the researchers to understand the target market better. This study employs the first classification from Fletcher (1989) and Archer & Fletcher (1990) studies that assess the economic impact of tourism in certain regions or countries with a common Input-Output model.

CHAPTER 3

METHODOLOGY

Conducting the Input-Output model establishes the practical tools for analysis and regional development projects, furthermore, it can be fundamental to estimate and identify multiple drawbacks in other statistical data. The I-O model study can then be employed to improve the regional statistical system and provide reliable information to make regional tourism policies (Waluyo, 2015). The model has been broadly used in empirical studies to forecast the economic impacts of tourism. To summarize how a project impacts at community or regional level, conforming to Johnson (1999) better using Input-Output analysis instead of the other models. Tourism-related information, formed in data & model, is required to influence both tourism activities as well as their relationship with local and regional economic activities. Before analyzing the economic impact of gastronomic tourism, assessing the economic value of the tourism sector and converting into the economic value of 54 sectors within the 2007 Updated I-O table of Bali Province Domestic Transaction at Producer Price are needed as presented in Appendix B. The financial year 2007 I-O table is the most updated table published by Bali Statistic Bureau and still reliable with Bali province's condition nowadays, as McLennan mentioned on the previous chapter. The change in technology, notably for the small province like Bali, does not occur rapidly in most sectors, yet still generates reasonable result ahead.

According to Indonesia National Tourism Satellite Account (NESPARNAS) 2018, the demand side of the tourism sector contains local, international, and national tourist (pre and post-trip) expenditures, private and government investment expenditure in the tourism sector, as well as both central and regional government expenditure (current expenditure) to promote and develop the tourism sector. Moreover, the constructed I-O table fundamentally consider Law of The Republic of Indonesia Number 10 of 2009 concerning Tourism (State Gazette of the Republic of Indonesia of 2009 Article 11, Supplement to Official State Gazette of the Republic of Indonesia Number 4966), which emphasizes the management of government and tourism-related institutions in conducting research and development to support the tourism affairs development. Tourist data collection has been drawn by the

household approach through Regional Socioeconomic Survey (SUSENAS) with sampling methodology. 54 x 54 sectors classify the dimension of this research I-O table. I-O table sector-x-sector represents the relation between final consumption sectors and the homogenous production unit. The intermediate usage row describes each sector as well as the total amount of money required to produce a product of the other sectors, thus the analysis aims to find the change impact in the final consumption of a sector towards this sector production. Details of subsector classification in quadrant I is denoted as domestic output. In general, the common methodology to estimate the output of each sector is utilizing the production approach. Suwantoro (1997) breaks down various businesses under the tourism sector, which provide goods and/or services to fulfil tourist needs as well as organizing tourism that is directly related to tourism activities.

As the corresponding matching theory tables above, thus, this study estimates the direct contribution of the tourism sector as represented by Accommodation & food service activities in Bali's economy is shown in Table 3 below.

Sector	Bali's GRDP at Current Market Price Share (%)					
	2015	2016	2017	2018	2019	2020
Agriculture, forestry & fishing	14.56	14.36	14.00	13.78	13.53	14.68
Mining & quarrying	1.10	1.09	1.01	0.94	0.87	0.94
Manufacturing	6.53	6.43	6.09	6.00	6.03	6.16
Electricity & gas	0.18	0.22	0.24	0.24	0.23	0.23
Water supply, sewerage, waste management & remediation activities	0.18	0.18	0.19	0.17	0.17	0.19
Construction	8.80	8.87	8.80	9.39	9.63	10.46
Wholesale & retail trade, repair of motor vehicles & motorcycles	8.36	8.31	8.50	8.48	8.56	9.04
Transportation & storage	9.27	9.59	9.68	9.74	9.73	7.59
Accommodation & food service activities	23.26	22.99	23.67	23.33	23.26	19.54
Information & communication	5.20	5.19	5.23	5.27	5.30	6.11
Financial & insurance activities	4.14	4.14	4.08	3.88	3.98	4.26
Real estate	4.21	4.08	3.99	3.89	3.84	4.33
Business activities	1.01	1.04	1.04	1.05	1.04	1.14
Public administration & defence, compulsory social security	4.85	4.89	4.77	4.94	4.91	5.56
Education	4.79	5.00	5.02	5.13	5.14	5.61
Human health & social work activities	2.04	2.10	2.13	2.17	2.17	2.52

Other services activities	1.50	1.53	1.57	1.59	1.61	1.69
Total	**100**	**100**	**100**	**100**	**100**	**100**
Total direct economic value of tourism sector (IDR million)	**40,592,738.98**	**44,384,585.66**	**50,040,101.13**	**54,544,991.94**	**58,747,107.76**	**22,616,128.80**

Table 3 Direct economic value of tourism sector

Source: Bali Statistic Bureau (2020)

Furthermore, to analyze both direct and indirect impacts from the tourism sector, the direct economic value of the tourism sector is denoted as a *shock* in order to calculate the total impact of the tourism sector. Thus, the direct economic value of the tourism sector is defined as a final demand change matrix that can be a stimulus or shock to analyze the economic impact of the tourism sector in terms of output, value-added, and income.

Linkage Finding

Estimating the linkage among Bali's economic sectors aims to identify that the tourism sector has a strong correlation with other sectors. The gastronomic tourism-related sectors such as accommodation, food and beverage, as well as recreational, cultural and sporting activities, only bring the tourism sector backward further rather than bring it forward. This is assumed that the tourism sector has a high backward linkage with other sectors compared to other sectors' enforcement. In other words, when the tourism sector is booming, the other sectors that supply inputs to tourism-related sectors will be booming as well. The significant way to expand the role and impact of the tourism sector is rising both local and international tourist visit since the increase in total visit would increase the demand for accommodation service, food and beverage service, and recreational, cultural and sporting activities, which therefore will attract other sectors which supply inputs to these tourism-related sectors.

Before calculating the index of backward and forward linkage, the Leontief inverse matrix calculation must analyze the linkage of the production industries in the economic system. The total row of Leontief inverse matrix calculation will construct a forward linkage value for each sector in the economy while summing up

the columns results in a backward linkage value for each sector in the economy. Both summation of this row and column is 70.4741 (*N* = 54). For instance, the backward linkage value of Food and Beverage service is 1.6871, thus the backward linkage index (*BL*) for this sector is:

$$BL_{Food\ and\ beverage} = \frac{1.6871}{1/54 \text{ x } 70.4741} = 1.2928 \approx 1.29$$

The forward linkage index for (*FL*) Food and Beverage service is computed the same way as the corresponding backward linkage index. The forward linkage value of Food and Beverage service is 1.5966, thus the forward linkage index for this sector is:

$$FL_{Food\ and\ beverage} = \frac{1.5966}{1/54 \text{ x } 70.4741} = 1.2234 \approx 1.22$$

The backward and forward linkage indices for 54 sectors in Bali's economy are presented in Appendix F.

Data Collection and Analysis

Business survey

The total output generated by Ubud Food Festival 2019 was analyzed towards a two-stage approaches, local attendees and business level researches. For business level research a survey, as shown in Appendix C that was translated into Indonesian language, is included all visitors' expenditures to estimate the local and visitors' spending during the festival in September 2019. The data set used referred to The Ubud Food Festival 2019, held on April 26-28, 2019. The designated sectors to estimate the economic impact analysis are appointed depend on the festival analyzed. The business survey for the supply approach focuses on six industries directly associated with gastronomic tourism have participated in this study are listed in Table 4.

Sector	Categories of enterprises in the sector	No. of enterprises participated
Accommodation	Hotels, hostels, guest houses	33
Food & beverage	*Warung makan*, restaurants, cafes, bars, bakeries	20
Inland transport	Taxi and car, motorbike, and bicycle rental, gas station	5
Retail trade	Convenience stores, traditional market, clothing store	24
Craftsman work	Souvenirs, paintings, statues	8
Recreational, cultural and sporting activities	Barong dance performances, museums, art galleries, yoga classes and wellness centres	11

Table 4 Business survey: structure and number of the sectors

Source: Compiled by author

Accommodation: this sector is usually gathered in an economic impact study under the methodology section by analyzing the time-period events. Resorts, hostels, guest houses, and hotels naturally attract revenue from 'out-of-towners' who do not live in that area. The estimation of the direct and indirect effect becomes essential for the event studies. Besides, local people do not make any contribution to the lodging sector revenues, thus local's expenditure on accommodation does not require to be deducted from the total income. There are 33 valid responses from this sector.

Food and beverage: This sector is highly essential for the Ubud Food Festival study as every event held in the heart of a city is usually surrounded by restaurants, cafes, bars, and food stalls. Besides, when visitors attend a food festival, they tend to explore the area to get more gastronomic experiences outside the festival. The survey was completed by 20 responses from restaurants, cafes, bars, and local food stalls.

Inland transport: it is fascinating not only to spot the monetary impact but also to catch how the transportation providers, such as a car, motorbike, and bicycle rentals as well as gas stations, take action during the event and

interconnected accordingly. The preliminary list of this service industry contains five enterprises where most of them are motorbike rental companies.

Retail trade: the grocery stores demonstrated various patterns during the festivals as the visitors look for the other goods aside from festival offered, such as cigarettes, snacks, drinks, clothes, cosmetics, or daily need goods at lower prices than inside the festivals. The retail chains in Bali are quite burgeoning. From small convenience stores such as Circle K, Indomaret, and Alfamart to large shopping malls like Clandys and Hardy's Shopping Center. Even though it is more complicated to draw the retail chain's data as they are unlikely to share their financial report, most of the respondents for this sector come from local sellers in the traditional market, boutiques, and smaller local groceries called *warungs*. The total respondent from a retail shop is 24 respondents.

Recreational, cultural, and sporting activities: the preliminary list in the recreational, cultural, and sporting sector includes 11 organizations; museums, *Barong* and *Kecak* dance performances, and wellness centres (spa, yoga, and salon). The visitors who spend more than one day at the festival are likely to spend their leisure time on entertaining activities after attending the event. However, any natural tourism destination in Bali, such as beach, rice field, waterfall, or forest that does not charge the entrance fee is not included in this research.

Craftsman work: The craftsman work product from Bali is one of the most popular souvenirs for tourists. Not only from the traditional point of view, the craftsman products generate income from the trade fares. The local craftsmen usually sell their products, namely paintings, statues, and other craft goods made from clay, ceramic, porcelain, and glass on art galleries, museums, art markets, so forth. Even though this sector does not show significant performance during the festivals, most of the attendees came from Bali Province, yet the local tourists who come from the rest of the country are likely to spend their money on Balinese souvenirs and gifts. There are 8 participants completed the business survey.

In order to be likely rigorous while assessing the revenue that has been hypothetically earned, this study compares the event weekend's turnover with the revenue produced on the next weekend after the festival. The same year is selected to obtain a similar economic situation in general, whereas the closest weekend from the event prevents the seasonality effects.

Visitor survey

The local attendee survey representing the demand approach is conducted by contacting local visitors and asking them to complete a questionnaire in Appendix D and translated into Indonesian language regarding their demographics and influenced factors to attend UFF 2019. The visitor list was derived from secondary data of UFF and contacting them through email between September 2019 to March 2020 in order to distribute the online questionnaire that gains their festival-related spending during the festival was held. To calculate the average expenses per person, they can estimate the spending amount on those sectors. "Total visits" to the three-day Festival were according to *Taman Kuliner* gates count of 15,000 visits presented by event organizers, furthermore there are 628 questionnaires completed by Indonesian visitors. The survey result is shown in Table 5.

Total respondents (n) = 628

Gender	
Male	33%
Female	67%
Age	
Under 21	9%
21-34	43%
35-50	22%
51-64	18%
65 and older	8%
Place of residence	
Bali Province	73%
Rest of the country	27%
Visits UFF before	

Yes	61%
No	39%
Attends UFF 2019 on	
Friday	28%
Saturday	27%
Sunday	8%
Friday & Saturday	14%
Friday & Sunday	14%
Saturday & Sunday	1%
3 days	8%
Specifically come to Bali for UFF	
Yes	31%
No	69%

Table 5 Characteristic of respondents

Source: Compiled by author

Assessing the local visitors' total expenditure during the event, the average expenditure on products and services served through six interest industries is computed. This study's impact analysis excludes the expenditures on festival admission and registration as they had seven paid events during the three-day festival. Since the festival organizer's allocation of revenue is confidential, it is impossible to specify the percentage of their revenues spent in Bali or the industries they spend. Instead of presuming the festival organizer's purchases obey the pattern of predefined sectors above, this research assumes that the UFF revenue is not involved in Bali's economy. A total of 800 questionnaires were distributed; 628 respondents completed the questionnaires. Thus, the usable questionnaires after discarding those with incomplete answers and those answered by Balinese resident visitors amount to 170. Thus, the table of visitor's expenditure is shown in Table 6.

Non-festival Expenditure	Expenditure (IDR)	Percentage (%)
Accommodations	79,117,000	15.6%
Foods and Beverages	96,615,500	19.1%
Transport Services	135,355,000	26.7%

Retail Shopping	110,551,500	21.8%
Craftsman Works	9,465,000	1.9%
Recreational Activities	74,901,000	14.8%
Total	**506,005,000**	**100%**

Table 6 Visitors' expenditure to UFF 2019

Source: Compiled by author

Multiplier Finding

To develop certain sectors in the economy, the impact of these sectors on the whole economy should be analyzed and their impact on related sectors or so-called multiplier effects that will be created accordingly. The supporting sectors whose amount backward and forward linkage indices are larger than 1, ideally could expand the national economy as backward and forward linkage values define the constructed multiplier effects would encourage other sectors in the economy. Thus, in order to increase the multiplier effects in the economy, the tourism sector needs to raise tourist consumption.

The equation that shows the balance between output and final demand, otherwise speaking, the total output (X_i) of the I-O model is expressed by:

$$\mathrm{X_i} = \sum_{j=i}^{i} X_{ij} + F_i \qquad (1)$$

where: $\mathbf{X_i}$ = vector of sector gross output i (i = 1, 2, ..., n);

X_{ij}= Total output of sector i used as input sector j (j = 1, 2, ..., n);

F_i = final demand vector related to output sector i.

The Leontif's table emphasizes the sales sector (*i*) to industries as a linear function of total output (j_i), thus generated flows of sectors to the industries (x_{ij}) and designated matrix coefficients (a_{ij}) as the input used in a sector:

$$a_{ij} = \frac{x_{ij}}{X_j} \qquad (2)$$

From the above equation, we can draw $x_{ij} = a_{ij}X_j$ which can be substituted into (1) thus shown as equation below:

$$\mathrm{X_i} = \sum_{j=i}^{i} a_{ij}X_j + F_i \qquad \textbf{(3)}$$

This system can be delivered into matrix notation:

$$\begin{vmatrix} a_{11} & a_{12} & a_{1n} \\ a_{21} & a_{21} & a_{2n} \\ a_{n1}a_{n2} & \dots\dots & a_{nn} \end{vmatrix} \begin{vmatrix} X_1 \\ X_2 \\ X_n \end{vmatrix} + \begin{vmatrix} F_1 \\ F_2 \\ F_n \end{vmatrix} = \begin{vmatrix} X_1 \\ X_2 \\ X_n \end{vmatrix}$$

$$\mathbf{A \quad X + F = X}$$

$$X = AX + F \quad \textit{or} \quad F = (I - A)X \qquad \textbf{(4)}$$

where: X = output;

F = final demand;

I = identity matrix with numbers on diagonal line and zero on the other;

(I – A) = Leontif's matrix.

The solution to getting the output amount:

$$X = (I - A)^{-1}F \qquad \textbf{(5)}$$

where $(I - A)^{-1}$ is the Leontief inverse matrix with variables a_{ij} showing how much the output sector *i* change for every 1 million Indonesian Rupiah (hereinafter referred to as "IDR") change in final demand of sector *j.*

Computing the output multipliers, Leontief inverse matrix is derived. This type I inverse matrix represents the output amount required from each sector according to direct as well as indirect requirements to compose one unit (or 1 million IDR in this case) of output from a specific sector. The formula to get the output amount is:

$$L = (I - A)^{-1}$$

where L = the Leontief inverse matrix;

I = the Identity matrix;

A = the Direct Requirement matrix.

The Direct Requirement coefficients, as presented in Appendix E, are computed using primary inputs and intermediate output table, directly divided every column by the Total Domestic Input at Basic Prices columns, hence producing the Direct Requirement matrix. The coefficients in a specified sector's column of this table portray the amount of added output required from each sector to produce an extra million Rupiah's worth of output from that sector. To simplify Direct Requirement coefficients, a 54 x 54 matrix containing 54 products and services is built and name as the A matrix. The A matrix, as shown in is constructed to produce the first-round effect of each 'key' sectors in the output multiplier, accordingly, this matrix will be subtracted by 54 x 54 identity matrix (I) in order to build identity matrix minus the direct requirements matrix (hereinafter referred to as "I-A" matrix). The next step is to invert this "I-A" matrix into the type I Leontief inverse matrix[2]. Each column's total amount on demanding sectors in type I Leontief inverse matrix is indicated as the Simple multipliers (McLennan, 1996). The Total output multipliers are computed, taking into account the initial effects, the induced production of additional products and services, as well as the consumption induced effects. This set of multipliers define a 55 x 55 identity matrix ("B" matrix), as there are 55 variables within this matrix, which is constructed by attaching the previous A matrix the Compensation of employee row with the Final consumption expenditure column of the Direct Requirement matrix. Thus, the type II Leontief inverse matrix of B matrix or $(I - B)^{-1}$ or B* matrix is set. The set of output multiplier is shown in Appendix G and denoted Total Multipliers as the value of Output Multiplier for each sector in the economy.

The value-added multipliers can be calculated by applying value-added coefficients in Value-added at basic prices row of the Direct Requirement matrix. These coefficients are symbolized as the vector h. To compute the First round effect,

[2] Computed in Microsoft Excel using MINVERSE function to produce matrix $(I - A)^{-1}$

Simple multipliers, as well as Total multipliers of each sector, the matrix multiplication function is utilized. Manually, this calculation is a 1 x 54 and 54 x 54 matrix multiplication. Followed by 1 x 54 array represented by the Initial effect column and 54 x 54 array referred to matrix A for First round effects, matrix $(I - A)^{-1}$ for Simple value-added multipliers, and matrix C* for Total value-added multipliers. The remaining value-added multipliers can be computed in the same way as the corresponding output multipliers, finally, the value-added multipliers are constructed, as shown in Appendix H.

The income multipliers can be computed by applying household coefficients in the Compensation of employee row of the Direct Requirement matrix. These coefficients are denoted as the private income effects and symbolized as the vector *i*. To compute the First round effect, Simple income multipliers, as well as Total income multipliers of each sector, the matrix multiplication function is utilized. Manually, this calculation is a 1 x 54 and 54 x 54 matrix multiplication. Followed by 1 x 54 array represented by the Initial effect column and 54 x 54 array referred to matrix A for First round effects, matrix $(I - A)^{-1}$ for Simple income multipliers, and matrix B* for Total income multipliers. The remaining income multipliers can be computed in the same way as the corresponding output multipliers, finally, the income multipliers are constructed as shown in Appendix I.

CHAPTER 4

RESULTS

Linkage indices

According to the calculation of backward linkage index (BL) and forward linkage index (FL) of the 54 sectors in Bali's economy can accordingly be grouped into four categories depending on their values (i.e., size):

1) Key Sectors; strong BL and FL: BL > 1 and FL > 1

   The sector is dependent on inter-industry supply (only BL > 1) generally dependent on (connected to) other sectors

2) Strong BL but weak FL: BL > 1 and FL < 1

   The sector is dependent on inter-industry supply, or demander sector

3) Weak BL but strong FL: BL < 1 and FL > 1

   The sector is dependent on inter-industry demand, or supplier sector

4) Weak Linkage Sectors: weak BL and FL: BL < 1 and FL < 1

   The sector is independent of (not strongly connected to) other sectors (both BL and FL are weak)

To emphasize the use of numerical calculation in Appendix F, taking fifteen gastronomic tourism-related sectors from Bali's economy and collecting in Table 7 that presents four of them have strong tourism components, including Textile, apparel, and leather products, Food and beverage services, Star hotels, and Airfreight services. Five sectors have a strong backward linkage index and weak forward linkage index, only one sector has a weak backward linkage index and strong forward linkage index, and five sectors have both weak backward and forward linkage indices.

Industries	BL > 1 FL > 1	BL > 1 FL < 1	BL < 1 FL > 1	BL < 1 FL < 1
Food, beverage, tobacco, coffee industries		x		
Textile, apparel, and leather products	x			
Craftsman industry and excavated products		x		
Jewellery manufacturer				x
Food and beverage services	x			
Star hotels	x			
Non-star hotels		x		

Inland transportation				x
Sea freight services				x
Airfreight services	x			
Travel agent				x
Transportation support services		x		
Money changer		x		
Cultural attractions				x
Recreational and sporting activities			x	

Table 7 Inter-industry linkages for gastronomic tourism-related industries

Source: Appendix F

Thus, among the leading gastronomic tourism-related industries, most of their tourism components have strong backward linkages to other industries, but weak forward linkages as well as have both weak backward and forward linkages. In particular, the backward and forward linkage indices differ among gastronomic tourism-related industries.

Multipliers

The output, value-added, as well as income, multipliers for the gastronomic tourism-related sector in Bali's economy, are presented in Table 8.

Sector	Output Multiplier	Value-added Multiplier	Income Multiplier
Food, beverage, tobacco, coffee industries	2.09	3.59	0.29
Textile, apparel, and leather products	1.75	2.96	0.26
Craftsman industry and excavated products	1.80	3.64	0.31
Jewellery manufacturer	1.69	3.44	0.37
Food and beverage services	2.15	4.25	0.34
Star hotels	1.82	4.34	0.27
Non-star hotels	1.89	3.70	0.32
Inland transportation	1.55	3.82	0.26
Sea freight services	1.53	4.41	0.27
Airfreight services	1.47	3.97	0.12
Travel agent	1.57	2.81	0.23

Transportation support services	1.83	4.29	0.38
Money changer	1.57	4.46	0.17
Cultural attractions	1.59	4.58	0.27
Recreational and sporting activities	1.57	4.74	0.30
Average	**1.72**	**3.93**	**0.28**

Table 8 Multipliers of gastronomic tourism-related sectors

Source: Compiled by author

Table 10 identified that Recreational and sporting activities have the largest amount of Value-added Multiplier of 4.74. This number denotes an extra million Rupiah's worth in the final demand of Recreational and sporting activities will impact the overall value-added increase in the Indonesian economy of IDR 4.74 million. Furthermore, the Craftsman industry and excavated products, star and non-star hotels, as well as food and beverage, have Value-added Multiplier of 3.64, 4.37, and 3.7, as well as 4.25 respectively. Transportation support services define the largest amount of Income Multiplier with 0.38. This number identified that every 100 people increase in certain sectors will create job opportunities in other sectors of 38 people. The multiplier analysis concludes that gastronomic tourism has quite large Value-added multiplier effect as the average number of these multipliers among 15 tourism -related sectors is 3.93. Considering the backward linkage and large multiplier numbers of the tourism sector, gastronomic tourism could be the 'key' sector to expand Bali's economic growth through its relation with other sectors, that play a role as the tourism sector's input.

The Ubud Food Festival 2019 has been organized in the Ubud district for three days, whereby 15,000 visitors came to the district to participate in the festival (Yayasan Mudra Swari Saraswati, 2020). In order to obtain a similar economic situation in general as mentioned in Chapter 3, Table 9 shows the average change in revenues of each sector assigned in this study as follows

Selected sector	Business revenues during UFF 2019 (IDR)	Change in revenues (%)	Business revenues on the weekend after UFF 2019 (IDR)
Accommodation	3,194,443,376	10.6	2,885,915,631
Food & beverage	2,843,429,382	64.88	1,724,572,350
Inland transport	87,111,175	36.43	63,850,237
Retail trade	1,584,848,316	5.01	1,509,206,968
Craftsman work	63,469,235	84.13	34,469,235
Recreational, cultural, and sporting activities	569,556,634	23.39	461,577,059

Table 9 Comparison of business revenues

Source: Compiled by author

This study's impact analysis excludes the expenditures on festival admission and registration as they had seven paid events during the three-day festival. Since the allocation of revenue by the festival organizers is confidential, it is impossible to specify the percentage of their revenues spent in Bali Province or the industries they spend. Instead of presuming the purchases by the festival organizer obey the pattern of predefined sectors above, this research assumes that the UFF revenue is not involved in Bali's economy. However, the only relevant expenditure proportion to estimate the economic impact from UFF 2019 is just the "new money" injected into the community establishes as secondary effect containing indirect and induced impacts. It is generated by 27 percent of respondents from outside Bali Province. Thus, the table of visitor's average expenditure would be shown in Table 10.

Non-festival Expenditure	Expenditure (IDR)	Percentage (%)
Accommodations	21,361,590	15.6
Foods and Beverages	26,086,185	19.1
Transport Services	36,545,850	26.7
Retail Shopping	29,848,905	21.8

Craftsman Works	2,555,550	1.9
Recreational Activities	20,223,270	14.8
Total	136,621,350	100

Table 10 Visitor's expenditure after deducted

Source: Compiled by author

This table shows that UFF visitors who come from outside Bali Province spent 26.7 percent of their budget on transport services with the total of 36,545,850 IDR from 170 respondents. Their next travelling budget was allocated to retail shopping as much as 21.8 percent or 29,848,905 IDR and followed by foods and beverages as much as 19.1 percent or 26,086,185 IDR that were spent outside the festival expenditure.

A.	**Sales Benefits from UFF 2019**		
1.	Total number of visitors (people)	15,000	
2.	Non-local visitors	27%	
3.	Total expenditure (in visitor survey)	IDR 506,005,000	
4.	Average expenditure per person	IDR 805,741	
5.	Total visitor spending	15,000 x 0.27 x IDR 805,741	IDR 3,263,251,050
6.	Estimated capture rate	85%	
7.	Output multiplier	1.72	
8.	Total sales effects	IDR 3,263,251,050 x 0.85 x 1.72	IDR 4,770,873,035
B.	**Income Benefits from UFF 2019**		
1.	Total sales	IDR 4,770,873,035	
2.	Income multiplier	0.28	
3.	Total income effects	IDR 4,770,873,035 x 0.28	IDR 1,335,844,450

Table 11 Summary of the economic impact of UFF 2019

Table 11 summarizes the economic impacts of the visitors' expenditure on the Ubud Food Festival 2019. The festival visitors spent an average amount of 805,741 IDR during the festival. This expenditure was shared with accommodations, foods and beverages, transport services, retail shopping, souvenirs, as well as recreational activities with a total spending amount of 3,263,251,050 IDR. Before occupying Input-Output analysis, utilizing capture rates to estimate the amount of expenditure that reaches the Balinese local economy was designated as a prevalent

rule of thumb for tourism retail industries depending on the size of the regional economy. The model estimates that around eighty-five percent of visitor expenditure remained in the regional economy along with an additional reduction in spending in order to count the taxes that might have been included in estimated spending before adjusting the applicable tax rates, then represents the final demand in Bali Province for the local benefits. The Ubud Food Festival has generated total sales effects of 4,770,873,035 IDR. The regional economy has benefited 1,335,844,450 IDR from a total income for the three-day festival, indicates a 33.20 percent of Bali Province's local revenue of in 2019.

CHAPTER 5

DISCUSSION AND CONCLUSIONS

The economic impact of the Ubud Food Festival 2019 is computed in the form of total sales and total income to the Balinese government. The impacts are calculated based on the actual spending of the visitors during the festival. As several tourism impact studies, the festival does not explicitly identify an action being assessed. This study analyzes economic activity associated with visits to Ubud Food Festival 2019 by presuming that any trip to the festival is supposed to be counted as the festival impact. This flatly assumes that none of the visitor spending would have happened in the absence of the festival. Since Ubud Food Festival is organized in a district, a number of visitors and expenditure would have occurred in the absence of the festival. Nevertheless, the model framework can be applied to appraise a specific policy design, including the change in visitors and expenditure during the organized festival.

As a tool, the economic impact analysis allows the policymakers' designated policies and plans to generate visitors to the region to be analyzed based upon visitor's spending contribution to the local economy. By assigning a particular region to be evaluated, this will divide the visitors into residents or tourists, which expenditure should be included (only expenses spent within the assessed region), and which primary and secondary effects should be computed (sales of local enterprises). All the visitor spending is not entirely recorded in the regional economy. It depends on region size and the ability to produce products locally. The effects of 1.00 million Indonesian Rupiah spent by the visitors might be small to Bali's economy if the products used by them have to be imported. Thus, the local impacts would be degraded if the products purchased by tourists are not locally produced.

A prominent feature of gastronomic tourism is that a rise in final demand shows an injection of funds beyond the economy. Accordingly, it is suitable to analyze tourism impacts on Bali's economy as if tourism output was an expansion in final demand. In order to measure the economic impact on the tourism sector, this study focuses on international tourist expenditure. By multiplying the Leontief inverse matrix of the final demand vector with all sectors other than tourism inserted

as zero, the economic activities supported this consumption, differentiating between direct and 'direct + indirect' effects. The output, value-added, and income impacts are presented in Table 10.

This study cannot compare the economic impact generated by Ubud Food Festival 2019 and Ubud Food Festival 2020, as the 2020 festival was being canceled due to the Covid-19 pandemic. Through the Letter of Air Transportation's Director General of The Republic of Indonesia[3], May 20, 2020 concerning the PCR Health Protocol Requirements in I Gusti Ngurah Rai-Bali Airport and the Letter of Sea Transportation's Director General of The Republic of Indonesia Number Um.002/39/18/OJPL/2020, May 22, 2020 concerning the PCR Health Protocol Requirements at the Port in responses to the letter of Balinese Governor Number: 550/3563/Dishub, May 18, 2020 concerning the Passenger Control on Entry Gate in Bali Province, stated in point 1 that Balinese government only allows people with special occasions, namely a) working on public or private organization to handle the Covid-19 care service, defence, security, and order services, health service, basic needs service, basic needs support service, or important economic functions service; b) patients with emergency treatment; c) family of the patients with emergency treatment; and d) Indonesian Migrant Workers, Indonesian people (WNI), Indonesian students, as well as the repatriation with special case by their origin regional government, to enter Bali province along with applicable requirements. Thus, the number of tourists who intentionally travel to Bali in order to experience gastronomic tourism is portrayed as zero. Balinese Governor Regulation Number 46 Year 2020 also prohibit the community, stakeholders, businessmen, or people in charge of the public facilities to organize an event that influence people to gather in a big forum and punish them if they against the regulation based on the Balinese Governor Regulation Number 46 Year 2020 and other laws.

Nevertheless, considering a large number of backward linkage indices on textile, apparel, and leather products, food and beverage industries, accommodation service, as well as airfreight service could be the best sectors to maintain and invest in. Policymakers must consider that dimension of these impacts is assigned to a

[3] Number Um.101/0002/DRJU.KSIHU-2020

larger extent by the capacity to enchant more tourists to the festival as the economic impact is notably spotted in those sectors and remained survive during the crisis. Finally, this study's findings have important implications for regional policymakers as both theoretically and empirically present the input-output model's use to assess gastronomic tourism's economic impact in Bali. From the findings of this study, gastronomic tourism appears to be the 'key' sector to expand Bali's economic growth through its relationship with other sectors, which play a role as the tourism sector's input. The Balinese Governor designed Regional Regulation Draft (Ranperda) of Bali Province concerning the Industrial Development Plans (RPIP) of Bali Province Year 2020-2040 which could be a 'blue print' of how to organize the province development fundamentally and comprehensively by implementing Balinese Regional Development vision "*Nangun Sat Kerthi Loka Bali* through Planned Development Pattern towards a New Era of Bali". This regional regulation is a guideline to balance Balinese economy structure that is used to rely just on tourism sector to integrate with the other important sectors, namely agriculture and small industries. The type of industries that will be developed here depend on Balinese potentials and resources supported by local researches and innovations. Bali province is popular with its art and culture, furthermore this can expand Balinese economy through the small industry sector, such as textile, apparel, and leather products industry.

However, it is worthwhile asking regarding how much the value-added of the tourism activities, in terms of tourism agenda and supply, is related to the local productive framework. Those mentioned figures, though important in presenting that the culinary activities and the associated tourism generate important economic flows in Bali, are not to be taken for granted except for a comparison. Finally, this research proves that the economic impact models are reliable as a method for assessing those economic flows obtained from a tourism event. Nonetheless, we must considerate several restrictions of this model: some are related to the nature of the Input-Output analysis, which takes into account only functions of production of constant returns on scale, whilst others are related to the other kind of instruments that are accessible in the I-O tables, especially the regional, national, as well as

overall multipliers. The derived multiplier coefficients on the local economy shows the characteristic of this study in assessing the economic impact of tourism activity, with a strong complementary investment in new culinary and tourist equipment, infrastructures, and facilities. The assessment of consumer interest in the festival, either local or non-local visitors, is ascertained due to the festival's uniqueness. Somehow, the results are valid in short and medium terms, besides the figures can initiate the first step of a potential cost-benefit analysis, hence of the long-term estimate of tourism activities.

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APPENDICES

Appendix A

UFF event analysis										
UFF	**Date**	**Theme**	**Number of Events**			**Ticket Sold**	**Number of Stalls**	**Number of plates of food sold**	**Speakers (people)**	**Sponsors & Partners**
			Paid	**Free**	**Total**					
2015	5-7 June	Ubud Food Festival (A three-day culinary adventure with Indonesian foods the star)	48	37	85	**1,258**	90	8,000	50	51
2016	27-29 May	Go Local	59	46	105	**2,062**	95	12,000	64	66
2017	12-14 May	Every Flavor is A Story	60	48	108	**1,433**	75	22,000	108	98
2018	13-15 April	Generasi Inovasi	50	52	102	**2,029**	98	37,000	102	106
2019	26-28 April	Spice Up the World	60	51	111	**3,830**	88	24,000	104	109
UFF 2020 is postponed to June 26-28, 2020										

UFF audience analysis											
UFF	**Total (people)**	**Growth**	**Gender**		**Nationality**		**Age**				
			Female	**Male**	**Indonesian**	**Foreigner**	**< 21**	**21 - 34**	**35 - 50**	**51 - 64**	**65+**
2015	6,610		3,966	2,644	64%	36%	8%	45%	20%	18%	9%
2016	7,912	19.7%	4,747	3,165	58%	42%	15%	35%	21%	21%	8%
2017	9,000	13.8%	7,200	1,800	42%	58%	7%	29%	40%	19%	5%
2018	12,000	33.4%	8,640	3,360	85%	15%	10%	30%	34%	21%	5%
2019	15,000	25.0%	10,050	4,950	85%	15%	9%	43%	22%	18%	8%

Appendix B

Bali: I-O table of 54 industries in economy, 2007 (IDR million)							
Sector	**Intermediate Usage**	**Total Imports**	**Compensation of employees**	**Gross Operating Surplus (GOS)**	**Other net taxes on production**	**Value-added at basic price**	**Total domestic input at basic prices**
Rice	1,092,329	57,883	126,353	882,914	26,327	1,035,594	1,174,150
Corn	38,727	21,797	14,560	108,207	2,670	125,437	179,989
Tubers	130,818	39,349	25,202	229,280	6,891	261,373	334,883
Vegetables and fruits	569,761	175,154	115,186	2,169,419	18,269	2,302,874	2,846,822
Peanut	49,595	12,291	11,701	172,550	6,506	190,758	242,783
Soybean	20,945	6,271	1,462	21,487	810	23,759	36,291
Food ingredients	2,792	440	550	3,786	153	4,489	6,857
Coconut	121,568	16,413	7,805	151,606	3,027	162,438	206,716
Tobacco	30,371	12,445	12,384	14,747	537	27,668	47,433
Coffee	258,237	25,098	10,362	129,852	10,088	150,302	291,323
Other crops	481,817	101,452	30,922	333,612	2,499	367,033	637,731
Big livestock	117,746	20,611	19,075	38,938	1,027	59,040	128,830
Small livestock	2,059,123	493,276	88,275	781,188	102,356	971,819	2,634,792
Livestock slaughter	1,271,162	286,201	109,647	557,043	16,589	683,279	3,581,645
Poultry and poultry products	545,507	76,225	67,041	392,338	9,030	468,409	618,040
Forestry and forest products	2,477	229	1,074	1,197	11	2,282	2,642
Fishery	1,003,164	822,468	421,717	986,513	65,569	1,473,799	2,733,888

Bali: I-O table of 54 industries in economy, 2007 (IDR million)							
Sector	**Intermediate Usage**	**Total Imports**	**Compensation of employees**	**Gross Operating Surplus (GOS)**	**Other net taxes on production**	**Value-added at basic price**	**Total domestic input at basic prices**
Rock	14,002	2,140	4,170	4,470	470	9,110	14,002
Excavated products	366,571	81,072	12,844	245,234	13,906	271,985	416,819
Mining	-	-	-	-	-	-	-
Rice husking and milling products	433,054	18,187	24,036	235,139	17,806	276,980	1,461,892
Copra industry, cooking oils	230,657	26,910	52,593	71,883	10,964	135,440	513,770
Food, beverage, tobacco, coffee industries	232,383	187,263	87,364	113,107	30,948	231,419	907,200
Textile, apparel, and leather products	736,806	1,616,686	576,697	854,206	160,652	1,591,556	4,573,493
Lumber industry and woodwork	505,005	937,819	284,982	394,533	94,729	774,244	2,065,523
Paper industry, paper and cardboard products	23,546	61,317	17,479	39,167	6,920	63,566	153,676
Fuel & chemical industry, rubber, plastic	477,859	351,471	55,226	289,609	38,600	383,435	1,308,658
Craftsman industry and excavated products	17,073	7,161	4,362	7,290	930	12,583	28,223
Building material industry (non-metallic mineral products)	36,874	27,679	13,165	24,462	2,224	39,851	94,356
Carrosserie and automotive industry	19,858	189,524	17,554	124,189	956	142,698	362,791

Bali: I-O table of 54 industries in economy, 2007 (IDR million)							
Sector	**Intermediate Usage**	**Total Imports**	**Compensation of employees**	**Gross Operating Surplus (GOS)**	**Other net taxes on production**	**Value-added at basic price**	**Total domestic input at basic prices**
Non-ferrous metals Industry	-	-	-	-	-	-	-
Jewellery manufacturer	1,257	7,700	5,210	6,449	931	12,590	24,071
Other manufacturing products	60,176	140,393	13,370	29,863	3,452	46,685	216,165
Electricity and drinking water	583,766	329,681	83,857	658,767	103,444	846,067	1,231,572
Construction	1,017,220	2,101,116	933,046	757,322	187,153	1,877,521	5,450,928
Trading companies	2,934,424	1,017,106	2,071,669	1,830,963	644,356	4,546,989	6,924,565
Food and beverage services	796,659	821,772	1,227,926	1,840,582	480,011	3,548,519	7,894,487
Star hotels	243,864	849,782	929,162	2,637,424	424,852	3,991,439	7,133,897
Non-star hotels	52,130	95,825	66,813	101,861	14,121	182,796	424,108
Inland transportation	127,034	481,210	274,306	593,104	210,197	1,077,607	1,837,324
Sea freight services	108,719	58,976	63,456	184,775	33,262	281,492	387,399
Airfreight services	808,541	744,124	170,637	1,381,594	592,814	2,145,045	3,690,691
Travel agent	259,398	383,214	115,022	210,804	32,101	357,926	911,650
Transportation support services	260,557	74,341	140,078	199,714	89,383	429,175	663,456
Communication, postal and courier services	348,478	283,682	253,451	488,962	185,436	927,849	1,435,337
Banking	1,063,454	437,205	146,988	729,369	28,138	904,495	1,597,411
Money changer	127,540	20,135	17,082	102,423	12,033	131,538	208,768

Bali: I-O table of 54 industries in economy, 2007 (IDR million)							
Sector	**Intermediate Usage**	**Total Imports**	**Compensation of employees**	**Gross Operating Surplus (GOS)**	**Other net taxes on production**	**Value-added at basic price**	**Total domestic input at basic prices**
Building and land rental	463,665	75,226	150,204	1,170,307	212,591	1,533,102	502,001
Other financial services	318,598	81,798	81,830	184,184	12,875	278,889	502,001
Company services	286,339	129,986	73,171	173,586	13,325	260,081	419,863
General public administration	-	204,307	3,542,785	-	186,461	3,729,247	4,056,603
Social services	29,974	200,689	67,644	48,683	5,824	122,152	366,013
Cultural attractions	731	953	1,395	4,322	491	6,207	8,657
Recreational and sporting activities	665,483	327,301	693,697	1,950,640	211,45	2,855,789	3,630,704

Bali: I-O table of 54 industries in economy, 2007 (IDR million)							
Sector	**Intermediate Usage**	**Final Consumption Expenditure**	**Gross Fixed Capital Formation (GFCF)**	**Inventory**	**Total Exports**	**Final Demand**	**Total Supply**
Rice	1,092,329	-	-	81,821	-	81,821	1,174,150
Corn	38,727	119,776	-	21,272	215	141,262	179,989
Tubers	130,818	181,513	-	-	22,552	204,065	334,883
Vegetables and fruits	569,761	1,529,538	11,853	-	735,669	2,277,060	2,846,822
Peanut	49,595	168,657	-	24,530	-	193,187	242,783
Soybean	20,945	11,287	-	182	3,877	15,346	36,291
Food ingredients	2,792	5,347	-	(1,440)	160	4,066	6,857
Coconut	121,568	72,504	-	12,221	423	85,149	206,716
Tobacco	30,371	10,267	-	2,958	3,838	17,062	47,433
Coffee	258,237	17,573	-	14,567	946	33,086	291,323
Other crops	481,817	60,690	19,672	(10,398)	85,948	155,913	637,731
Big livestock	117,746	9,290	1,742	52	-	11,084	128,830
Small livestock	2,059,123	510,957	45,067	8,902	10,742	575,668	2,634,792
Livestock slaughter	1,271,162	2,156,198	-	-	154,284	2,310,482	3,581,645
Poultry and poultry products	545,507	20,376	-	46,235	5,922	72,533	618,040
Forestry and forest products	2,477	112	-	(61)	115	166	2,642
Fishery	1,003,164	1,119,415	-	59,239	552,070	1,730,723	2,733,888
Rock	14,002	-	-	-	-	-	14,002
Excavated products	366,571	-	-	227	50,021	50,247	416,819
Mining	-	-	-	-	-	-	-
Rice husking and milling products	433,054	1,203,360	-	(213,035)	38,514	1,028,840	1,461,892

Bali: I-O table of 54 industries in economy, 2007 (IDR million)							
Sector	**Intermediate Usage**	**Final Consumption Expenditure**	**Gross Fixed Capital Formation (GFCF)**	**Inventory**	**Total Exports**	**Final Demand**	**Total Supply**
Copra industry, cooking oils	230,657	114,802	-	(29,971)	198,282	283,113	513,770
Food, beverage, tobacco, coffee industries	232,383	132,192	-	(5,931)	548,556	674,818	907,200
Textile, apparel, and leather products	736,806	542,996	100,956	(149,598)	3,342,331	3,836,686	4,573,493
Lumber industry and woodwork	505,005	20,324	59,459	(53,927)	1,534,663	1,560,518	2,065,523
Paper industry, paper and cardboard products	23,546	41,113	-	67	88,951	130,131	153,676
Fuel & chemical industry, rubber, plastic	477,859	51,849	-	458	778,493	830,799	1,308,658
Craftsman industry and excavated products	17,073	6,387	22	-	4,742	11,151	28,223
Building material industry (non-metallic mineral products)	36,874	-	4,381	18	53,083	57,482	94,356
Carrosserie and automotive industry	19,858	1,326	59,859	11,161	270,587	342,933	362,791
Non-ferrous metals Industry	-	-	-	-	-	-	-
Jewellery manufacturer	1,257	6,553	99	41	16,121	22,814	24,071
Other manufacturing products	60,176	4,906	3,426	85	147,572	155,989	216,165
Electricity and drinking water	583,766	647,805	-	-	-	647,805	1,231,572
Construction	1,017,220	-	4,433,706	-	-	4,433,706	5,450,928

Bali: I-O table of 54 industries in economy, 2007 (IDR million)							
Sector	**Intermediate Usage**	**Final Consumption Expenditure**	**Gross Fixed Capital Formation (GFCF)**	**Inventory**	**Total Exports**	**Final Demand**	**Total Supply**
Trading companies	2,934,424	2,374,230	112,679	(99,850)	1,603,081	3,990,140	6,924,565
Food and beverage services	796,659	1,656,572	-	-	5,441,255	7,097,827	7,894,487
Star hotels	243,864	49,981	-	-	6,840,052	6,890,033	7,133,897
Non-star hotels	52,130	13,473	-	-	358,505	371,978	424,108
Inland transportation	127,034	139,522	3,466	(3,071)	1,570,373	1,710,290	1,837,324
Sea freight services	108,719	107,111	1,772	(1,5700	171,368	278,680	387,399
Airfreight services	808,541	639,957	20,309	(17,9970	2,239,881	2,882,150	3,690,691
Travel agent	259,398	63,720	1,524	(1,350)	588,359	652,252	911,650
Transportation support services	260,557	263,938	4,786	(4,241)	138,417	402,900	663,456
Communication, postal and courier services	348,478	254,666	-	-	832,194	1,086,859	1,435,337
Banking	1,063,454	494,863	-	-	39,093	533,957	1,597,411
Money changer	127,540	5,942	-	-	75,287	81,228	208,768
Building and land rental	463,665	1,241,047	-	-	-	1,241,047	1,704,712
Other financial services	318,598	180,198	-	-	3,205	183,403	502,001
Company services	286,339	133,524	-	-	-	133,524	419,863
General public administration	-	4,056,602	-	-	-	4,056,602	4,056,603
Social services	29,974	134,951	-	-	201,088	336,039	366,013
Cultural attractions	731	290	-	-	7,636	7,926	8,657
Recreational and sporting activities	665,483	401,385	190,535	-	2,373,300	2,965,220	3,630,704

Bali: I-O table of 54 industries in economy, 2007 (IDR million)							
Sector	**Intermediate Usage**	**Final Consumption Expenditure**	**Gross Fixed Capital Formation (GFCF)**	**Inventory**	**Total Exports**	**Final Demand**	**Total Supply**
Intermediate input	21,447,834	20,979,079	5,075,316	(308,403)	31,131,770	56,877,762	78,325,606
Total import	14,541,352	-	-	-	-	-	-
Compensation of employees	13,336,586						
Gross Operating Surplus (GOS)	24,663,666						
Other net taxes on production	4,336,168						
Value-added at basic prices	42,336,420						
Total domestic input at basic prices	78,325,606						

Appendix C

Survey about the earnings of Gianyar Regency enterprises during Ubud Food Festival 2019

This survey is a part of a Master thesis from Business and Managerial Economic student in Chulalongkorn University, Thailand. The thesis aims to assess the economic impact of gastronomic tourism during in Bali.

The information you provide will be confidential. The results of the survey will be released only in the form of totals and percentages. If you have any further questions, please kindly contact Sabrina Yuka Amilia (sabrinayuka@yahoo.com or +6282141179832).

Q1. Please indicate your business type:

- o Accommodation (hotels, hostels, resorts, guesthouses, inn)
- o Food and beverages (cafes, bars, restaurants)
- o Retailer (traditional markets, convenience stores, boutiques, *warungs*)
- o Transport services (gas stations, car & bike rentals, drivers)
- o Entertainment (museums, art galleries, temples, yoga studios)
- o Art and craft (artworks, craftsmen, traditional dance classes)

Q2. Did your business operate during Ubud Food Festival?

- o Yes
- o No

Q3. Please indicate your revenues (in IDR) generated during Ubud Food Festival (26-28 April 2019). (_____)

Q4. Please indicate your revenues (in IDR) on the weekend generated after Ubud Food Festival. (_____)

Appendix D

Survey about the locals' expenditure in Ubud Food Festival 2019

This survey is a part of a Master thesis from Business and Managerial Economic student in Chulalongkorn University, Thailand. The thesis aims to assess the economic impact of gastronomic tourism during in Bali.

The information you provide will be confidential. The results of the survey will be released only in the form of totals and percentages. If you have any further questions, please kindly contact Sabrina Yuka Amilia (sabrinayuka@yahoo.com or +6282141179832).

Part 1. General questions

Q1. Please indicate your gender:

- ○ Female
- ○ Male

Q2. Please indicate your age group:

- ○ >20
- ○ 21-34
- ○ 35-50
- ○ 51-64
- ○ 65+

Q3. Where do you usually live?

- ○ In Bali province (please specify _____)
- ○ Outside Bali (please specify _____)

Q4. Have you attended the Ubud Food Festival 2019?

- ○ Yes
- ○ No (go to Part 3)

Q5. On which days did you attend the Ubud Food Festival 2019?

- Friday
- Saturday
- Sunday
- Friday & Saturday
- Friday & Sunday
- Saturday & Sunday
- 3 days

Part 2. Expenditure

Q6. Please include all your spending. Remember to insert all payments made by check,

bankcard, and credit card. If you are not sure with the exact amount, please estimate at your (in IDR)

Accommodation_____

Meals, food, and drinks in restaurants/bars/cafes _____

Retail shopping _____

Transportation _____

Entertainment costs _____

Craftsmen products _____

Part 3. Other

Q7. Have you preferred to stay in Bali in April to attend the Ubud Food Festival rather

than take a holiday?

- Yes
- No

Q8. If Ubud Food Festival would not have taken place in 2019, where would you probably have stayed?

- In Bali province
- Elsewhere (please specify) _____

Appendix E

Bali: Direct requirement coefficients of 54 industries																
Sector	Rice	Corn	Tubers	Vegetables and fruits	Peanut	Soybean	Food ingredients	Coconut	Tobacco	Coffee	Other crops	Big livestock	Small livestock	Livestock slaughter	Poultry & poultry products	Forestry & forest products
Rice	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0120	0.0000	0.0000	0.0005	0.0000
Corn	0.0000	0.0511	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0021	0.0000	0.0000	0.0016	0.0000
Tubers	0.0000	0.0000	0.0190	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0032	0.0000	0.0000	0.0008	0.0000
Vegetables and fruits	0.0000	0.0000	0.0000	0.0714	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0575	0.0060	0.0000	0.0005	0.0000
Peanut	0.0000	0.0000	0.0000	0.0000	0.1055	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0204	0.0000	0.0000	0.0000	0.0000
Soybean	0.0000	0.0000	0.0000	0.0000	0.0000	0.0794	0.0000	0.0000	0.0000	0.0000	0.0000	0.0007	0.0000	0.0000	0.0001	0.0000
Food ingredients	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1137	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0001	0.0000
Coconut	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Tobacco	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Coffee	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2757	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000
Other crops	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0013	0.0011	0.0007	0.0003	0.0614	0.0630	0.0122	0.0000	0.0000	0.0000
Big livestock	0.0015	0.0049	0.0018	0.0010	0.0003	0.0000	0.0008	0.0004	0.0056	0.0005	0.0021	0.0341	0.0002	0.0292	0.0000	0.0000
Small livestock	0.0000	0.0195	0.0015	0.0000	0.0000	0.0000	0.0000	0.0007	0.0000	0.0000	0.0000	0.0000	0.1945	0.4097	0.0000	0.0000
Livestock slaughter	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0109	0.0000	0.0000
Poultry and poultry products	0.0000	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006	0.0017	0.1094	0.0443	0.0000
Forestry and forest products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0001	0.0000	0.0001	0.0002	0.0000	0.0000	0.0001	0.0002
Fishery	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Rock	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Bali: Direct requirement coefficients of 54 industries																
Sector	Rice	Corn	Tubers	Vegetables and fruits	Peanut	Soybean	Food ingredients	Coconut	Tobacco	Coffee	Other crops	Big livestock	Small livestock	Livestock slaughter	Poultry & poultry products	Forestry & forest products
Excavated products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mining	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Rice husking and milling products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0241	0.0652	0.0000	0.0035	0.0000
Copra industry, cooking oils	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0077	0.0000	0.0025	0.0000	0.0000	0.0000	0.0000
Food, beverage, tobacco, coffee industries	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0012	0.0000	0.0008	0.0089	0.0290	0.0000	0.0219	0.0006
Textile, apparel, and leather products	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0013	0.0023	0.0035	0.0001	0.0000	0.0000	0.0000	0.0023
Lumber industry and woodwork	0.0000	0.0010	0.0000	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	0.0003	0.0001	0.0003	0.0001
Paper industry, paper and cardboard products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0003	0.0002	0.0013	0.0000	0.0000	0.0000	0.0000	0.0006
Fuel & chemical industry, rubber, plastic	0.0189	0.0364	0.0222	0.0087	0.0099	0.0111	0.0007	0.0070	0.0734	0.0334	0.0393	0.0015	0.0044	0.0001	0.0012	0.0053
Craftsman industry and excavated products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Building material industry (non-metallic mineral products)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Carrosserie and automotive industry	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Non-ferrous metals Industry	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Bali: Direct requirement coefficients of 54 industries																
Sector	Rice	Corn	Tubers	Vegetables and fruits	Peanut	Soybean	Food ingredients	Coconut	Tobacco	Coffee	Other crops	Big livestock	Small livestock	Livestock slaughter	Poultry & poultry products	Forestry & forest products
Jewellery manufacturer	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other manufacturing products	0.0000	0.0000	0.0001	0.0004	0.0000	0.0000	0.0000	0.0007	0.0009	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity and drinking water	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0004	0.0071	0.0030	0.0016	0.0011	0.0000
Construction	0.0036	0.0018	0.0008	0.0004	0.0001	0.0035	0.0000	0.0367	0.0029	0.0006	0.0289	0.0145	0.0009	0.0001	0.0058	0.0145
Trading companies	0.0103	0.0368	0.0153	0.0255	0.0291	0.0297	0.0415	0.0049	0.0389	0.0565	0.0300	0.0541	0.0798	0.1273	0.0252	0.0040
Food and beverage services	0.0000	0.0018	0.0122	0.0086	0.0035	0.0053	0.0000	0.0497	0.0068	0.0000	0.0087	0.0306	0.0000	0.0000	0.0002	0.0060
Star hotels	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Non-star hotels	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Inland transportation	0.0004	0.0019	0.0024	0.0022	0.0014	0.0012	0.0014	0.0010	0.0012	0.0018	0.0014	0.0018	0.0026	0.0040	0.0009	0.0006
Sea freight services	0.0002	0.0006	0.0002	0.0004	0.0005	0.0005	0.0007	0.0001	0.0006	0.0009	0.0005	0.0017	0.0039	0.0034	0.0009	0.0001
Airfreight services	0.0019	0.0066	0.0028	0.0046	0.0052	0.0053	0.0075	0.0009	0.0070	0.0102	0.0054	0.0098	0.0144	0.0229	0.0045	0.0007
Travel agent	0.0001	0.0005	0.0002	0.0003	0.0004	0.0004	0.0006	0.0001	0.0005	0.0008	0.0004	0.0007	0.0011	0.0017	0.0003	0.0001
Transportation support services	0.0004	0.0016	0.0007	0.0011	0.0012	0.0013	0.0018	0.0002	0.0017	0.0024	0.0013	0.0023	0.0034	0.0054	0.0011	0.0002
Communication, postal and courier services	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	0.0000	0.0000	0.0000	0.0000	0.0002	0.0004	0.0000
Banking	0.0005	0.0013	0.0006	0.0006	0.0012	0.0233	0.0000	0.0071	0.0040	0.0021	0.0742	0.0058	0.0056	0.0008	0.0000	0.0043
Money changer	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0007	0.0000	0.0000
Building and land rental	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1114	0.0063	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other financial services	0.0051	0.0043	0.0049	0.0028	0.0010	0.0006	0.0000	0.0039	0.0032	0.0016	0.0046	0.0044	0.0043	0.0007	0.0000	0.0024

Bali: Direct requirement coefficients of 54 industries																
Sector	Rice	Corn	Tubers	Vegetables and fruits	Peanut	Soybean	Food ingredients	Coconut	Tobacco	Coffee	Other crops	Big livestock	Small livestock	Livestock slaughter	Poultry & poultry products	Forestry & forest products
Company services	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0022	0.0005	0.0001	0.0008
General public administration	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Social services	0.0009	0.0042	0.0000	0.0000	0.0000	0.0044	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	0.0000	0.0000
Cultural attractions	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0040	0.0000	0.0000	0.0000	0.0000
Recreational and sporting activities	0.0023	0.0077	0.0171	0.0012	0.0043	0.0066	0.0000	0.0109	0.0005	0.0006	0.0010	0.0132	0.0091	0.0002	0.0032	0.0070
Total import	0.0493	0.1211	0.1175	0.0615	0.0506	0.1728	0.0641	0.0794	0.2624	0.0862	0.1591	0.1600	0.1872	0.0799	0.1233	0.0866
Intermediate inputs (sub-total)	**0.0687**	**0.1820**	**0.1020**	**0.1295**	**0.1637**	**0.1725**	**0.2812**	**0.1348**	**0.1543**	**0.3979**	**0.2654**	**0.3817**	**0.4439**	**0.7293**	**0.1188**	**0.0498**
Compensation of employees	0.1076	0.0809	0.0753	0.0405	0.0482	0.0403	0.0802	0.0378	0.2611	0.0356	0.0485	0.1481	0.0335	0.0306	0.1085	0.4065
Gross Operating Surplus (GOS)	0.7520	0.6012	0.6847	0.7620	0.7107	0.5921	0.5521	0.7334	0.3109	0.4457	0.5231	0.3022	0.2965	0.1555	0.6348	0.4530
Other net taxes on production	0.0224	0.0148	0.0206	0.0064	0.0268	0.0223	0.0223	0.0146	0.0113	0.0346	0.0039	0.0080	0.0388	0.0046	0.0146	0.0041
Value-added at basic prices	**0.8820**	**0.6969**	**0.7805**	**0.8089**	**0.7857**	**0.6547**	**0.6547**	**0.7858**	**0.5833**	**0.5159**	**0.5755**	**0.4583**	**0.3688**	**0.1908**	**0.7579**	**0.8636**
Total domestic input at basic prices	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**

Bali: Direct requirement coefficients of 54 industries																
Sector	Fishery	Rock	Excavated products	Mining	Rice husking & milling products	Copra industry, cooking oils	Food, beverage, tobacco, coffee industries	Textile, apparel, & leather products	Lumber industry & woodwork	Paper industry, paper & cardboard products	Fuel & chemical industry, rubber, plastic	Craftsman industry and excavated products	Building material industry (non-metallic mineral products)	Carrosserie & automotive industry	Non-ferrous metals Industry	Jewellery manufacturer
Rice	0.0005	0.0000	0.0000	0.0000	0.7270	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	0.0000	0.0000	0.0000
Corn	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0073	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Tubers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0033	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vegetables and fruits	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0663	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Peanut	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0065	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Soybean	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0189	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Food ingredients	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Coconut	0.0000	0.0000	0.0000	0.0000	0.0000	0.1787	0.0030	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Tobacco	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0333	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Coffee	0.0000	0.0000	0.0000	0.0000	0.0000	0.3462	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other crops	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0037	0.0137	0.0000	0.0000	0.2073	0.0000	0.0000	0.0000	0.0000	0.0000
Big livestock	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Small livestock	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0045	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Livestock slaughter	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0156	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Poultry and poultry products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0082	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Forestry and forest products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	0.0000	0.0000	0.0022	0.0001	0.0000	0.0000	0.0000
Fishery	0.0341	0.0000	0.0000	0.0000	0.0000	0.0000	0.1581	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Rock	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0769	0.0578	0.0000	0.0000	0.0000

Bali: Direct requirement coefficients of 54 industries																
Sector	Fishery	Rock	Excavated products	Mining	Rice husking & milling products	Copra industry, cooking oils	Food, beverage, tobacco, coffee industries	Textile, apparel, & leather products	Lumber industry & woodwork	Paper industry, paper & cardboard products	Fuel & chemical industry, rubber, plastic	Craftsman industry and excavated products	Building material industry (non-metallic mineral products)	Carrosserie & automotive industry	Non-ferrous metals Industry	Jewellery manufacturer
Excavated products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0848	0.0371	0.0000	0.0000	0.0001
Mining	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Rice husking and milling products	0.0002	0.0000	0.0000	0.0000	0.0284	0.0000	0.0091	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Copra industry, cooking oils	0.0000	0.0000	0.0000	0.0000	0.0000	0.0023	0.0081	0.0000	0.0000	0.0000	0.0009	0.0000	0.0000	0.0000	0.0000	0.0000
Food, beverage, tobacco, coffee industries	0.0039	0.0000	0.0000	0.0000	0.0000	0.0000	0.0191	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Textile, apparel, and leather products	0.0034	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.1079	0.0010	0.0000	0.0016	0.0000	0.0007	0.0001	0.0000	0.0000
Lumber industry and woodwork	0.0004	0.0000	0.0100	0.0000	0.0000	0.0081	0.0001	0.0001	0.0735	0.0000	0.0000	0.0009	0.0597	0.0000	0.0000	0.0000
Paper industry, paper and cardboard products	0.0000	0.0000	0.0001	0.0000	0.0000	0.0001	0.0000	0.0002	0.0005	0.0177	0.0017	0.0004	0.0000	0.0001	0.0000	0.0000
Fuel & chemical industry, rubber, plastic	0.0001	0.0009	0.0043	0.0000	0.0003	0.0005	0.0003	0.0173	0.0092	0.0258	0.0741	0.0003	0.0002	0.0077	0.0000	0.0001
Craftsman industry and excavated products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0041	0.0000	0.0000	0.0029
Building material industry (non-metallic mineral products)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0012	0.0046	0.0000	0.0000	0.0000
Carrosserie and automotive industry	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0229	0.0000	0.0001
Non-ferrous metals Industry	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Bali: Direct requirement coefficients of 54 industries																
Sector	Fishery	Rock	Excavated products	Mining	Rice husking & milling products	Copra industry, cooking oils	Food, beverage, tobacco, coffee industries	Textile, apparel, & leather products	Lumber industry & woodwork	Paper industry, paper & cardboard products	Fuel & chemical industry, rubber, plastic	Craftsman industry and excavated products	Building material industry (non-metallic mineral products)	Carrosserie & automotive industry	Non-ferrous metals Industry	Jewellery manufacturer
Jewellery manufacturer	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0522
Other manufacturing products	0.0015	0.0000	0.0001	0.0000	0.0001	0.0001	0.0002	0.0016	0.0025	0.0003	0.0019	0.0000	0.0016	0.0000	0.0000	0.0012
Electricity and drinking water	0.0003	0.0000	0.0007	0.0000	0.0002	0.0009	0.0015	0.0254	0.0054	0.0517	0.0049	0.0000	0.0014	0.0088	0.0000	0.0009
Construction	0.0116	0.0891	0.1089	0.0000	0.0003	0.0004	0.0009	0.0003	0.0020	0.0000	0.0023	0.0072	0.0151	0.0003	0.0000	0.0003
Trading companies	0.0205	0.0004	0.0059	0.0000	0.0296	0.0983	0.1136	0.0470	0.0335	0.0213	0.0658	0.0486	0.0543	0.0158	0.0000	0.0552
Food and beverage services	0.0003	0.0000	0.0006	0.0000	0.0000	0.0009	0.0143	0.0075	0.0014	0.0000	0.0000	0.0112	0.0000	0.0029	0.0000	0.0010
Star hotels	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0042	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Non-star hotels	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0037	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Inland transportation	0.0006	0.0005	0.0006	0.0000	0.0009	0.0033	0.0039	0.0037	0.0015	0.0007	0.0023	0.0020	0.0023	0.0010	0.0000	0.0068
Sea freight services	0.0003	0.0880	0.0003	0.0000	0.0005	0.0016	0.0018	0.0042	0.0005	0.0003	0.0010	0.0008	0.0009	0.0047	0.0000	0.0043
Airfreight services	0.0037	0.0001	0.0011	0.0000	0.0053	0.0177	0.0205	0.0119	0.0060	0.0038	0.0119	0.0088	0.0098	0.0029	0.0000	0.0129
Travel agent	0.0003	0.0000	0.0001	0.0000	0.0004	0.0013	0.0015	0.0006	0.0005	0.0003	0.0009	0.0007	0.0007	0.0002	0.0000	0.0007
Transportation support services	0.0009	0.0000	0.0003	0.0000	0.0013	0.0042	0.0048	0.0022	0.0018	0.0010	0.0028	0.0021	0.0023	0.0007	0.0000	0.0023
Communication, postal and courier services	0.0003	0.0000	0.0137	0.0000	0.0000	0.0006	0.0009	0.0107	0.0048	0.0017	0.0045	0.0000	0.0023	0.0005	0.0000	0.0009
Banking	0.0018	0.0000	0.0023	0.0000	0.0015	0.0136	0.0038	0.0304	0.0229	0.0294	0.0163	0.0380	0.0142	0.0099	0.0000	0.0120
Money changer	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Building and land rental	0.0000	0.0000	0.0000	0.0000	0.0000	0.0031	0.0001	0.0016	0.0011	0.0079	0.0099	0.0000	0.0076	0.0000	0.0000	0.0003
Other financial services	0.0000	0.0000	0.0000	0.0000	0.0013	0.0000	0.0008	0.0002	0.0002	0.0033	0.0181	0.0000	0.0016	0.0000	0.0000	0.0008

Bali: Direct requirement coefficients of 54 industries																
Sector	Fishery	Rock	Excavated products	Mining	Rice husking & milling products	Copra industry, cooking oils	Food, beverage, tobacco, coffee industries	Textile, apparel, & leather products	Lumber industry & woodwork	Paper industry, paper & cardboard products	Fuel & chemical industry, rubber, plastic	Craftsman industry and excavated products	Building material industry (non-metallic mineral products)	Carrosserie & automotive industry	Non-ferrous metals Industry	Jewellery manufacturer
Company services	0.0001	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0002	0.0003	0.0008	0.0027	0.0044	0.0054	0.0002	0.0000	0.0000
General public administration	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Social services	0.0000	0.0000	0.0008	0.0000	0.0000	0.0000	0.0000	0.0001	0.0004	0.0001	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000
Cultural attractions	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Recreational and sporting activities	0.0750	0.0174	0.0031	0.0000	0.0009	0.0011	0.0036	0.0037	0.0014	0.0213	0.0075	0.0102	0.0000	0.0053	0.0000	0.0021
Total import	0.3008	0.1528	0.1945	0.0000	0.0124	0.0524	0.2064	0.3535	0.4540	0.3990	0.2686	0.2537	0.2933	0.5224	0.0000	0.3199
Intermediate inputs (sub-total)	**0.1601**	**0.1966**	**0.1530**	**0.0000**	**0.7981**	**0.6840**	**0.5385**	**0.2985**	**0.1711**	**0.1874**	**0.4384**	**0.3004**	**0.2843**	**0.0843**	**0.0000**	**0.1571**
Compensation of employees	0.1543	0.2978	0.0308	0.0000	0.0164	0.1024	0.0963	0.1261	0.1380	0.1137	0.0422	0.1546	0.1395	0.0484	0.0000	0.2164
Gross Operating Surplus (GOS)	0.3608	0.3193	0.5883	0.0000	0.1608	0.1399	0.1247	0.1868	0.1910	0.2549	0.2213	0.2583	0.2593	0.3423	0.0000	0.2679
Other net taxes on production	0.0240	0.0335	0.0334	0.0000	0.0122	0.0213	0.0341	0.0351	0.0459	0.0450	0.0295	0.0330	0.0236	0.0026	0.0000	0.0387
Value-added at basic prices	**0.5391**	**0.6506**	**0.6525**	**0.0000**	**0.1895**	**0.2636**	**0.2551**	**0.3480**	**0.3748**	**0.4136**	**0.2930**	**0.4458**	**0.4224**	**0.3933**	**0.0000**	**0.5230**
Total domestic input at basic prices	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**

Bali: Direct requirement coefficients of 54 industries																
Sector	Other manufacturing products	Electricity & drinking water	Construction	Trading companies	Food & beverage services	Star hotels	Non-star hotels	Inland transportation	Sea freight services	Airfreight services	Travel agent	Transportation support services	Communication, postal & courier services	Banking	Money changer	Building & land rental
Rice	0.0005	0.0000	0.0000	0.0000	0.7270	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	0.0000	0.0000	0.0000
Corn	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0073	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Tubers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0033	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vegetables and fruits	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0663	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Peanut	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0065	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Soybean	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0189	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Food ingredients	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Coconut	0.0000	0.0000	0.0000	0.0000	0.0000	0.1787	0.0030	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Tobacco	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0333	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Coffee	0.0000	0.0000	0.0000	0.0000	0.0000	0.3462	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other crops	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0037	0.0137	0.0000	0.0000	0.2073	0.0000	0.0000	0.0000	0.0000	0.0000
Big livestock	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Small livestock	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0045	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Livestock slaughter	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0156	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Poultry and poultry products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0082	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Forestry and forest products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	0.0000	0.0000	0.0022	0.0001	0.0000	0.0000	0.0000
Fishery	0.0341	0.0000	0.0000	0.0000	0.0000	0.0000	0.1581	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Rock	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0769	0.0578	0.0000	0.0000	0.0000

Bali: Direct requirement coefficients of 54 industries																
Sector	Other manufacturing products	Electricity & drinking water	Construction	Trading companies	Food & beverage services	Star hotels	Non-star hotels	Inland transportation	Sea freight services	Airfreight services	Travel agent	Transportation support services	Communication, postal & courier services	Banking	Money changer	Building & land rental
Excavated products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0848	0.0371	0.0000	0.0000	0.0001
Mining	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Rice husking and milling products	0.0002	0.0000	0.0000	0.0000	0.0284	0.0000	0.0091	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Copra industry, cooking oils	0.0000	0.0000	0.0000	0.0000	0.0000	0.0023	0.0081	0.0000	0.0000	0.0000	0.0009	0.0000	0.0000	0.0000	0.0000	0.0000
Food, beverage, tobacco, coffee industries	0.0039	0.0000	0.0000	0.0000	0.0000	0.0000	0.0191	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Textile, apparel, and leather products	0.0034	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.1079	0.0010	0.0000	0.0016	0.0000	0.0007	0.0001	0.0000	0.0000
Lumber industry and woodwork	0.0004	0.0000	0.0100	0.0000	0.0000	0.0081	0.0001	0.0001	0.0735	0.0000	0.0000	0.0009	0.0597	0.0000	0.0000	0.0000
Paper industry, paper and cardboard products	0.0000	0.0000	0.0001	0.0000	0.0000	0.0001	0.0000	0.0002	0.0005	0.0177	0.0017	0.0004	0.0000	0.0001	0.0000	0.0000
Fuel & chemical industry, rubber, plastic	0.0001	0.0009	0.0043	0.0000	0.0003	0.0005	0.0003	0.0173	0.0092	0.0258	0.0741	0.0003	0.0002	0.0077	0.0000	0.0001
Craftsman industry and excavated products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0041	0.0000	0.0000	0.0029
Building material industry (non-metallic mineral products)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0012	0.0046	0.0000	0.0000	0.0000
Carrosserie and automotive industry	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0229	0.0000	0.0001
Non-ferrous metals Industry	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Bali: Direct requirement coefficients of 54 industries																
Sector	Other manufacturing products	Electricity & drinking water	Construction	Trading companies	Food & beverage services	Star hotels	Non-star hotels	Inland transportation	Sea freight services	Airfreight services	Travel agent	Transportation support services	Communication, postal & courier services	Banking	Money changer	Building & land rental
Jewellery manufacturer	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0522
Other manufacturing products	0.0015	0.0000	0.0001	0.0000	0.0001	0.0001	0.0002	0.0016	0.0025	0.0003	0.0019	0.0000	0.0016	0.0000	0.0000	0.0012
Electricity and drinking water	0.0003	0.0000	0.0007	0.0000	0.0002	0.0009	0.0015	0.0254	0.0054	0.0517	0.0049	0.0000	0.0014	0.0088	0.0000	0.0009
Construction	0.0116	0.0891	0.1089	0.0000	0.0003	0.0004	0.0009	0.0003	0.0020	0.0000	0.0023	0.0072	0.0151	0.0003	0.0000	0.0003
Trading companies	0.0205	0.0004	0.0059	0.0000	0.0296	0.0983	0.1136	0.0470	0.0335	0.0213	0.0658	0.0486	0.0543	0.0158	0.0000	0.0552
Food and beverage services	0.0003	0.0000	0.0006	0.0000	0.0000	0.0009	0.0143	0.0075	0.0014	0.0000	0.0000	0.0112	0.0000	0.0029	0.0000	0.0010
Star hotels	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0042	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Non-star hotels	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0037	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Inland transportation	0.0006	0.0005	0.0006	0.0000	0.0009	0.0033	0.0039	0.0037	0.0015	0.0007	0.0023	0.0020	0.0023	0.0010	0.0000	0.0068
Sea freight services	0.0003	0.0880	0.0003	0.0000	0.0005	0.0016	0.0018	0.0042	0.0005	0.0003	0.0010	0.0008	0.0009	0.0047	0.0000	0.0043
Airfreight services	0.0037	0.0001	0.0011	0.0000	0.0053	0.0177	0.0205	0.0119	0.0060	0.0038	0.0119	0.0088	0.0098	0.0029	0.0000	0.0129
Travel agent	0.0003	0.0000	0.0001	0.0000	0.0004	0.0013	0.0015	0.0006	0.0005	0.0003	0.0009	0.0007	0.0007	0.0002	0.0000	0.0007
Transportation support services	0.0009	0.0000	0.0003	0.0000	0.0013	0.0042	0.0048	0.0022	0.0018	0.0010	0.0028	0.0021	0.0023	0.0007	0.0000	0.0023
Communication, postal and courier services	0.0003	0.0000	0.0137	0.0000	0.0000	0.0006	0.0009	0.0107	0.0048	0.0017	0.0045	0.0000	0.0023	0.0005	0.0000	0.0009
Banking	0.0018	0.0000	0.0023	0.0000	0.0015	0.0136	0.0038	0.0304	0.0229	0.0294	0.0163	0.0380	0.0142	0.0099	0.0000	0.0120
Money changer	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Building and land rental	0.0000	0.0000	0.0000	0.0000	0.0000	0.0031	0.0001	0.0016	0.0011	0.0079	0.0099	0.0000	0.0076	0.0000	0.0000	0.0003
Other financial services	0.0000	0.0000	0.0000	0.0000	0.0013	0.0000	0.0008	0.0002	0.0002	0.0033	0.0181	0.0000	0.0016	0.0000	0.0000	0.0008

Bali: Direct requirement coefficients of 54 industries																
Sector	Other manufacturing products	Electricity & drinking water	Construction	Trading companies	Food & beverage services	Star hotels	Non-star hotels	Inland transportation	Sea freight services	Airfreight services	Travel agent	Transportation support services	Communication, postal & courier services	Banking	Money changer	Building & land rental
Company services	0.0001	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0002	0.0003	0.0008	0.0027	0.0044	0.0054	0.0002	0.0000	0.0000
General public administration	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Social services	0.0000	0.0000	0.0008	0.0000	0.0000	0.0000	0.0000	0.0001	0.0004	0.0001	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000
Cultural attractions	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Recreational and sporting activities	0.0750	0.0174	0.0031	0.0000	0.0009	0.0011	0.0036	0.0037	0.0014	0.0213	0.0075	0.0102	0.0000	0.0053	0.0000	0.0021
Total import	0.6495	0.2677	0.3855	0.1469	0.1041	0.1191	0.2259	0.2619	0.1522	0.2016	0.4204	0.1121	0.1976	0.2737	0.0964	0.0441
Intermediate inputs (sub-total)	**0.1346**	**0.0453**	**0.2701**	**0.1965**	**0.4464**	**0.3214**	**0.3430**	**0.1516**	**0.1211**	**0.2172**	**0.1870**	**0.2411**	**0.1559**	**0.1601**	**0.2735**	**0.0565**
Compensation of employees	0.0619	0.0681	0.1712	0.2992	0.1555	0.1302	0.1575	0.1493	0.1638	0.0462	0.1262	0.2111	0.1766	0.0920	0.0818	0.0881
Gross Operating Surplus (GOS)	0.1382	0.5349	0.1389	0.2644	0.2331	0.3697	0.2402	0.3228	0.4770	0.3743	0.2312	0.3010	0.3407	0.4566	0.4906	0.6865
Other net taxes on production	0.0160	0.0840	0.0343	0.0931	0.0608	0.0596	0.0333	0.1144	0.0859	0.1606	0.0352	0.1347	0.1292	0.0176	0.0576	0.1247
Value-added at basic prices	**0.2160**	**0.6870**	**0.3444**	**0.6566**	**0.4495**	**0.5595**	**0.4310**	**0.5865**	**0.7266**	**0.5812**	**0.3926**	**0.6469**	**0.6464**	**0.5662**	**0.6301**	**0.8993**
Total domestic input at basic prices	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**

Bali: Direct requirement coefficients of 54 industries													
Sector	Other financial services	Company services	General public administration	Social services	Cultural attractions	Recreational & sporting activities	Intermediate usage	**Final consumption expenditure**	GFCF	Inventory	Total Export	Final demand	Total supply
Rice	0.0005	0.0000	0.0000	0.0000	0.7270	0.0000	**0.7631**	0.0000	0.0000	(0.2653)	0.0000	0.0014	0.0150
Corn	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0654**	0.0057	0.0000	(0.0690)	0.0000	0.0025	0.0023
Tubers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0472**	0.0087	0.0000	0.0000	0.0007	0.0036	0.0043
Vegetables and fruits	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.3054**	0.0729	0.0023	0.0000	0.0236	0.0400	0.0363
Peanut	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.1363**	0.0080	0.0000	(0.0795)	0.0000	0.0034	0.0031
Soybean	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0993**	0.0005	0.0000	(0.0006)	0.0001	0.0003	0.0005
Food ingredients	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.1148**	0.0003	0.0000	0.0047	0.0000	0.0001	0.0001
Coconut	0.0000	0.0000	0.0000	0.0000	0.0000	0.1787	**0.1890**	0.0035	0.0000	(0.0396)	0.0000	0.0015	0.0026
Tobacco	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0362**	0.0005	0.0000	(0.0096)	0.0001	0.0003	0.0006
Coffee	0.0000	0.0000	0.0000	0.0000	0.0000	0.3462	**0.6220**	0.0008	0.0000	(0.0472)	0.0000	0.0006	0.0037
Other crops	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	**0.3766**	0.0029	0.0039	0.0337	0.0028	0.0027	0.0081
Big livestock	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0830**	0.0004	0.0003	(0.0002)	0.0000	0.0002	0.0016
Small livestock	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.6409**	0.0244	0.0089	(0.0289)	0.0003	0.0101	0.0336
Livestock slaughter	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.1985**	0.1028	0.0000	0.0000	0.0050	0.0406	0.0457
Poultry and poultry products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.1909**	0.0010	0.0000	(0.1499)	0.0002	0.0013	0.0079
Forestry and forest products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0042**	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000
Fishery	0.0341	0.0000	0.0000	0.0000	0.0000	0.0000	**0.3043**	0.0534	0.0000	(0.1921)	0.0177	0.0304	0.0349
Rock	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.1359**	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002

Bali: Direct requirement coefficients of 54 industries													
Sector	Other financial services	Company services	General public administration	Social services	Cultural attractions	Recreational & sporting activities	Intermediate usage	**Final consumption expenditure**	GFCF	Inventory	Total Export	Final demand	Total supply
Excavated products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.1881**	0.0000	0.0000	(0.0007)	0.0016	0.0009	0.0053
Mining	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0000**	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Rice husking and milling products	0.0002	0.0000	0.0000	0.0000	0.0284	0.0000	**0.1651**	0.0574	0.0000	0.6908	0.0012	0.0181	0.0187
Copra industry, cooking oils	0.0000	0.0000	0.0000	0.0000	0.0000	0.0023	**0.0548**	0.0055	0.0000	0.0972	0.0064	0.0050	0.0066
Food, beverage, tobacco, coffee industries	0.0039	0.0000	0.0000	0.0000	0.0000	0.0000	**0.1101**	0.0063	0.0000	0.0192	0.0176	0.0119	0.0116
Textile, apparel, and leather products	0.0034	0.0000	0.0001	0.0000	0.0000	0.0000	**0.2432**	0.0259	0.0199	0.4851	0.1074	0.0675	0.0584
Lumber industry and woodwork	0.0004	0.0000	0.0100	0.0000	0.0000	0.0081	**0.2441**	0.0010	0.0117	0.1749	0.0493	0.0274	0.0264
Paper industry, paper and cardboard products	0.0000	0.0000	0.0001	0.0000	0.0000	0.0001	**0.0346**	0.0020	0.0000	(0.0002)	0.0029	0.0023	0.0020
Fuel & chemical industry, rubber, plastic	0.0001	0.0009	0.0043	0.0000	0.0003	0.0005	**0.4587**	0.0025	0.0000	(0.0015)	0.0250	0.0146	0.0167
Craftsman industry and excavated products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0102**	0.0003	0.0000	0.0000	0.0002	0.0002	0.0004
Building material industry (non-metallic mineral products)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0124**	0.0000	0.0009	(0.0001)	0.0017	0.0010	0.0012
Carrosserie and automotive industry	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0266**	0.0001	0.0118	(0.0362)	0.0087	0.0060	0.0046
Non-ferrous metals Industry	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0000**	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Bali: Direct requirement coefficients of 54 industries													
Sector	Other financial services	Company services	General public administration	Social services	Cultural attractions	Recreational & sporting activities	Intermediate usage	**Final consumption expenditure**	GFCF	Inventory	Total Export	Final demand	Total supply
Jewellery manufacturer	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0522**	0.0003	0.0000	(0.0001)	0.0005	0.0004	0.0003
Other manufacturing products	0.0015	0.0000	0.0001	0.0000	0.0001	0.0001	**0.0385**	0.0002	0.0007	(0.0003)	0.0047	0.0027	0.0028
Electricity and drinking water	0.0003	0.0000	0.0007	0.0000	0.0002	0.0009	**0.2915**	0.0309	0.0000	0.0000	0.0000	0.0114	0.0157
Construction	0.0116	0.0891	0.1089	0.0000	0.0003	0.0004	**0.7517**	0.0000	0.8736	0.0000	0.0000	0.0780	0.0696
Trading companies	0.0205	0.0004	0.0059	0.0000	0.0296	0.0983	**1.5347**	0.1132	0.0222	0.3238	0.0515	0.0702	0.0884
Food and beverage services	0.0003	0.0000	0.0006	0.0000	0.0000	0.0009	**0.4617**	0.0790	0.0000	0.0000	0.1748	0.1248	0.1008
Star hotels	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.2637**	0.0024	0.0000	0.0000	0.2197	0.1211	0.0911
Non-star hotels	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0135**	0.0006	0.0000	0.0000	0.0115	0.0065	0.0054
Inland transportation	0.0006	0.0005	0.0006	0.0000	0.0009	0.0033	**0.0747**	0.0067	0.0007	0.0100	0.0504	0.0301	0.0235
Sea freight services	0.0003	0.0880	0.0003	0.0000	0.0005	0.0016	**0.1445**	0.0051	0.0003	0.0051	0.0055	0.0049	0.0049
Airfreight services	0.0037	0.0001	0.0011	0.0000	0.0053	0.0177	**0.4022**	0.0305	0.0040	0.0584	0.0719	0.0507	0.0471
Travel agent	0.0003	0.0000	0.0001	0.0000	0.0004	0.0013	**0.1333**	0.0030	0.0003	0.0044	0.0189	0.0115	0.0116
Transportation support services	0.0009	0.0000	0.0003	0.0000	0.0013	0.0042	**0.1702**	0.0126	0.0009	0.0138	0.0044	0.0071	0.0085
Communication, postal and courier services	0.0003	0.0000	0.0137	0.0000	0.0000	0.0006	**0.2080**	0.0121	0.0000	0.0000	0.0267	0.0191	0.0183
Banking	0.0018	0.0000	0.0023	0.0000	0.0015	0.0136	**0.7152**	0.0236	0.0000	0.0000	0.0013	0.0094	0.0204
Money changer	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	**0.0622**	0.0003	0.0000	0.0000	0.0024	0.0014	0.0027
Building and land rental	0.0000	0.0000	0.0000	0.0000	0.0000	0.0031	**0.3279**	0.0592	0.0000	0.0000	0.0000	0.0218	0.0218
Other financial services	0.0000	0.0000	0.0000	0.0000	0.0013	0.0000	**0.1728**	0.0086	0.0000	0.0000	0.0001	0.0032	0.0064

Bali: Direct requirement coefficients of 54 industries													
Sector	Other financial services	Company services	General public administration	Social services	Cultural attractions	Recreational & sporting activities	Intermediate usage	**Final consumption expenditure**	GFCF	Inventory	Total Export	Final demand	Total supply
Company services	0.0001	0.0000	0.0000	0.0000	0.0000	0.0002	**0.1912**	0.0064	0.0000	0.0000	0.0000	0.0023	0.0054
General public administration	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0000**	0.1934	0.0000	0.0000	0.0000	0.0713	0.0518
Social services	0.0000	0.0000	0.0008	0.0000	0.0000	0.0000	**0.0253**	0.0064	0.0000	0.0000	0.0065	0.0059	0.0047
Cultural attractions	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0042**	0.0000	0.0000	0.0000	0.0002	0.0001	0.0001
Recreational and sporting activities	0.0750	0.0174	0.0031	0.0000	0.0009	0.0011	**0.4457**	0.0191	0.0375	0.0000	0.0762	0.0521	0.0464
Total import	0.1629	0.3096	0.0504	0.5483	0.1101	0.0901	**10.5750**						
Intermediate inputs (sub-total)	**0.2815**	**0.0710**	**0.0303**	**0.1180**	**0.1729**	**0.1233**	**12.3457**						
Compensation of employees	0.1630	0.1743	0.8733	0.1848	0.1611	0.1911	0.1703						
Gross Operating Surplus (GOS)	0.3669	0.4134	0.0000	0.1330	0.4992	0.5373	0.3149						
Other net taxes on production	0.0256	0.0317	0.0460	0.0159	0.0567	0.0582	0.0554						
Value-added at basic prices	**0.5556**	**0.6194**	**0.9193**	**0.3337**	**0.7170**	**0.7866**	**0.5405**						
Total domestic input at basic prices	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**						

Appendix F

Bali: Backward and Forward Linkage Indices for 54 industries in economy			
Code	**Sector**	**Backward Linkage Index**	**Forward Linkage Index**
001	Rice	0.84	1.51
002	Corn	0.96	0.82
003	Tubers	0.87	0.81
004	Vegetables and fruits	0.89	1.05
005	Peanut	0.92	0.89
006	Soybean	0.93	0.85
007	Food ingredients	1.03	0.87
008	Coconut	0.91	0.92
009	Tobacco	0.94	0.80
010	Coffee	1.24	1.45
011	Other crops	1.04	1.20
012	Big livestock	1.16	0.84
013	Small livestock	1.30	1.50
014	Livestock slaughter	1.61	0.99
015	Poultry and poultry products	0.89	0.95
016	Forestry and forest products	0.82	0.77
017	Fishery	0.92	1.07
018	Rock	0.95	0.87
019	Excavated products	0.92	0.96
020	Mining	0.77	0.77
021	Rice husking and milling products	1.46	0.96
022	Copra industry, cooking oils	1.51	0.83
023	Food, beverage, tobacco, coffee industries	1.30	0.89
024	Textile, apparel, and leather products	1.07	1.01
025	Lumber industry and woodwork	0.93	1.02
026	Paper industry, paper and cardboard products	0.94	0.80
027	Fuel & chemical industry, rubber, plastic	1.22	1.26
028	Craftsman industry and excavated products	1.05	0.78
029	Building material industry (non-metallic mineral products)	1.03	0.78
030	Carrosserie and automotive industry	0.85	0.79
031	Non-ferrous metals Industry	0.77	0.77
032	Jewellery manufacturer	0.91	0.81
033	Other manufacturing products	0.89	0.80
034	Electricity and drinking water	0.81	1.05
035	Construction	1.03	1.55
036	Trading companies	0.96	2.33
037	Food and beverage services	1.29	1.22
038	Star hotels	1.11	1.03
039	Non-star hotels	1.11	0.78

040	Inland transportation	0.91	0.84
041	Sea freight services	0.89	0.90
042	Airfreight services	1.00	1.18
043	Travel agent	0.96	0.90
044	Transportation support services	1.01	0.93
045	Communication, postal and courier services	0.92	0.98
046	Banking	0.93	1.56
047	Money changer	1.02	0.83
048	Building and land rental	0.82	1.11
049	Other financial services	1.02	0.96
050	Company services	0.84	0.95
051	General public administration	0.80	0.77
052	Social services	0.89	0.79
053	Cultural attractions	0.94	0.77
054	Recreational and sporting activities	0.89	1.20