Leading Sectors that Drive the Economy of Bali during the COVID-19 Pandemic

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Abstract

Due to the COVID-19 pandemic, the economy of Indonesia has weakened and contracted, although currently, the economy has recovered from it. The economy of Bali has experienced its lowest growth of all time. This is due to the huge impact of the COVID-19 pandemic on tourism in Bali, which is its economic locomotive. This research aims to analyze the potential sectors that can be developed by each regency and city in Bali to boost its economic recovery. The research used the LQ and overlay methods. The results of the research show that the sectors directly related to tourism have experienced contraction. Meanwhile, the sector that has progressed considerably and becomes a leading one during the current pandemic is the primary sector. Therefore, the Government of Bali needs to carry out an economic structural transformation, so that the economy will be stabilized and emerge stronger against various internal and external shocks.

Keywords: tourism sector; COVID-19; potential sectors; LQ analysis; balance economics transformation

1. Introduction

The COVID-19 pandemic has for almost two years hit the world and there have been no signs of recovery. The effect on the economies of most of the countries in the world is significant. The COVID-19 virus has spread at an alarming rate, infecting millions of people and halting economic activities in certain sectors due to the strict mobility restrictions to prevent the spread of the COVID-19 virus. Along with the increasing number of human victims of the COVID-19 virus, economic damage resulting from the biggest economic

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shock over the past several decades has occurred. It is expected that, in the long term, the deep recession triggered by the pandemic will last long through the lower level of investment, human capital erosion through the loss of jobs and school closures, and the fragmentation of global trade and supply chains (The World Bank, 2020). The World Bank has corrected the prospects for economic growth in all the countries in the world. The COVID-19 recession has caused the fastest and sharpest decline in the projection of consensus growth of all the global recessions since 1990. An examination of the speed of the current global economic crisis will help forecast how deep the recession will be. The sharp decline in global growth forecasts indicates the likelihood of a further downward revision and the need for additional measures in the next coming months to support economic activities.

The COVID-19 pandemic has caused economic uncertainties and recessions. Countries such as the United States, Japan, Singapore, Hong Kong, the EU countries, and South Korea have experienced negative economic growth since the first quarter of 2020 (Wuryandani, 2020). Indonesia's economic performance has become sluggish. Since the first cases of COVID-19 in Indonesia were confirmed at the beginning of 2020, the economic growth of the country has declined significantly from the second quarter of 2020 to the first quarter of 2021. Therefore, Indonesia plunged into recession during the period, and in the second quarter of 2021, it started to show signs of recovery by recording economic growth at 7.07% (YOY) (BPS, 2021). The bounce-back from such a situation occurred in the third quarter of 2020 due to the full support from the government through various forms of subsidies and other expenditures.

Although improvement has been seen, Bank Indonesia cuts the 2021 economic growth forecast to 3.8% from 4.6% based on an early assessment of the impact of the spread of the COVID-19 virus recently. The new forecast is based on the assumption that after mobility restrictions are implemented for one month, COVID-19 cases can be lowered.

Bali is one of the regions in Indonesia hit hardest by the economic impact of the COVID-19 pandemic. The most popular tourist destination in Indonesia and globally famous for its culture, Bali is in the lowest rank among the 34 provinces after its economy contracted by 10.8% in the second quarter of 2020. The tourism sector contributes around 50% to 60% of the province's income and most of its labor force work in the sector (Bali Post, 2019; The Jakarta Post, 2020). The impact of the COVID-19 pandemic in Bali is more severe than its impact in any other Indonesian region.

The hotel occupancy rate in Bali in August 2020 fell to only 3.68%, while it was 67% in the same month of 2019. The economic impact was felt not only by hotel owners or resort managers but also by hotel employees and those working

in hotel supply chains. They have to adapt quickly to this pandemic situation and struggle together to survive. The number of visitors to Bali's tourism destinations has also declined significantly. Colossal Kecak Dance, which is usually performed by about 60-100 dancers and generates an income of up to IDR 6 billion per year, cannot be performed because the audience is very little. The best location to watch the Kecak dance performance is at Uluwatu Temple. With the backdrop of the sunset, tourists can watch a phenomenal Kecak dance performance. In addition to Uluwatu Temple, the Kecak dance can also be found at Tanah Lot, GWK Cultural Park, Dalem Ubud Temple, Padang Tegal Stage, Batubulan, Umadewi Stage, and others. Water sports activities have been stopped due to the rules for the use of scuba diving and snorkeling related to the COVID-19 pandemic and because the shops of water sports equipment in Bali cannot have their equipment rented although the diving spots in Bali are beautiful and situated in a calm bay, rich with coral gardens, and colorful marine biodiversities (Baskoro, 2020).

The impact of the COVID-19 pandemic is related not only to the difficulty of curbing the fast and massive spread of the COVID-19 virus but also to the significant decline in economic activities resulting from the implementation of large-scale mobility restrictions in all the regions. The sector of tourism support services, which relies on the coming of tourists, suddenly collapsed. Since the sector supports 80% of the economy of Bali, the impact of its collapse is huge. The unemployment rate increased to 5.63% in 2020 from 1.57% in 2019. The poverty rate increased from 3.61% in 2019 to 4.45% in 2020. The COVID-19 pandemic has had a huge impact on the economic and social life of the community due to the drop in income. The Manpower Office of Bali Province estimated that at least 75,000 workers have been laid off or had to take a leave without being paid due to the COVID-19 pandemic (Natasha Teja, 2020).

Those who have lost their job due to the pandemic have to work a part-time jobs so that they can survive. To maintain their livelihood, many people in Bali have gone back to agricultural or livestock jobs. In the fourth quarter of 2020, employment in business fields related to the tourism business sector decreased compared to the last year 2019. The accommodation, dining, and beverage business fields recorded a decline of -3.52%. On the other hand, the increased absorption of labor that occurred in the agricultural business field increased by 3.76% (Bank Indonesia, 2021). Furthermore, those working outside the tourism sector have had their salary cut or a drop in income. This condition shows that tourism is vulnerable to shocks, especially the shock caused by the COVID-19 pandemic. Therefore, we need to think about alternative sectors that are more shockproof to support the economy of Bali. The economic sub-sectors that are shockproof will improve the stability of the economy of Bali and boost

its growth in the future. This research aims to identify and analyze the leading alternative sectors in Bali besides tourism and the temporary jobs taken by the laid-off workers during the COVID-19. The results of this study indicate the leading sectors in each region so that each region can begin to restructure its economy and shift towards several main leading sectors that persevere during the pandemic which indicates the strength and resilience of such sectors.

2. Literature Review

Economic growth is one of the most important terms in the world economy. Despite the criticism that the level and rate of growth do not necessarily reflect the actual standard of living of the population, they are still the most important measure of wealth. However, there are some drawbacks to a means of explaining the dynamics of domestic economic processes, in which it does not record the volume of production obtained from the informal market and changes in working hours that affect the welfare of society (Piętak, 2014). The premise of neoclassical growth theory is that it is possible to explain the broad patterns of economic change across countries, by looking at it through an aggregate production function. The aggregate production function relates the total output of an economy to the aggregate amounts of labor, human capital, and physical capital in the economy, and some simple measure of the level of technology in the economy as a whole (Banerjee & Duflo, 2004).

The new growth hypothesis is to be lauded for its work to endogenize development yet it nonetheless holds two deficiencies in the same way as the neoclassical growth hypothesis in which it disregards the impact of distributional changes in output and employment and aggregate demand (Cornwall & Cornwall, 1994). As the economy goes through the underlying change away from conventional family cultivation, the dependence on pay from acquired family cultivates declines, and the retirement saving out of profit rise (Das et al., 2015). The difference in saving rates across the two sectors (the modern sector and the traditional sector is only one possible feature of dual economies that affects aggregate growth. There is now a substantial body of evidence suggesting that there are large gaps in worker productivity across sectors in the early stages of development. These productivity gaps suggest that labor may be inefficiently allocated and that TFP and aggregate economic growth increase as labor migrate from the low-productivity traditional sector to the high-productivity modern sector.

A country's fiscal policy is also affected by its dual structure. The structural transformation from traditional to modern production, rising public infrastructure investment, and less democratic governments in many developing economies (Mourmouras & Rangazas, 2009). Similar to private

capital accumulation, the structural transformation of an economy away from the traditional sector and toward the modern sector may accelerate the growth in productive public capital per worker.

3. Research Methods

One of the important indicators to know the economic condition of a country in a certain period is Gross Domestic Product (GDP) data, whether the GDP is at current prices or constant prices. GDP is the total value added of all the business units of a certain country or the total value of the final goods and services produced/provided by all the economic units. GDP at current prices represents the value-added of goods and services calculated based on the prices that apply every year. Meanwhile, GDP at constant prices represents the value-added of the goods and services calculated based on the prices that apply in a certain year. GDP at current prices can be used to see economic shift and structure, while GDP at constant prices can be used to see economic growth from year to year (BPS, 2020).

Regional Gross Domestic Product (Regional GDP) can be used to see the economic conditions of a province/regency in a certain period. According to the Production Approach, Regional GDP is the total value added of the goods and services produced/provided by various production units in the area of a country in a certain period (usually one year). The production units for the purpose here are grouped into 17 business fields (sectors). This research used the RGDP of the regencies and cities in the Bali Province from 2019 – to 2020 to see whether there are changes in the comparative advantage of the economic sectors in Bali.

To identify the sectors that have the potential to be leading in the efforts to restore the economy of Bali, which has been in decline because the tourism-related sectors have been shaken, this research used two methods. The first method is the analysis of Location Quotient (LQ). LQ is a ratio between the role of an economic sector in a region and the role of the same economic sector nationally or in a region that has a wider scope of administration (Perkim, 2021). LQ can be calculated by using the following formula:

$$LQ = \left(\frac{X_{ir}}{X_r}\right) \Big/ \left(\frac{X_{in}}{X_n}\right) \quad \text{...1)}$$

X_{ir} is the value of sector i in each regency/city and X_r is the total value of all the sectors (Regional GDP) in each regency/city. The Regional GDP used here is the one at constant prices in the basic year of 2010. The LQ of all the sectors in 2019 will be compared with the one in 2020. If the result is LQ>1, it can be said

that the economic sector in question has a relatively high production value and plays an important role in the economy of the region, which makes it a leading sector. On the contrary, if the result is LQ<1, it can be said that the sector has not yet played a significant role in the economy of the region or it is not a leading sector. If the result is LQ = 1, the productivity of the sector is in balance.

A shift-share analysis is usually used to analyze and know the shift and role of the economy of a region. This method is used to observe the structure and shift of an economy by comparing the growth of a sector in a region with the growth of the same sector in a region that has a higher administrative level. In general, the analysis refers to the growth assumption of the economic sectors in a planning region and the growth assumption of the economic sectors in a reference region. The analysis also investigates the conditions of the sectors that have experienced changes in or increased their economic performance in a planning region. In addition, the analysis can be used to identify the sluggish sectors and the thriving sectors, the results of which can be used as a consideration when employing the people in a region (Nugraha Rusli et al., 2021).

Proportional Growth Components (PGC) in a shift-share analysis are deviations from the national/regional share of a region. If PGC > 0, the sector in question can be categorized as experiencing rapid growth. On the contrary, if PGC < 0, the sector can be categorized as experiencing slow growth. Regional Share Growth Components (RSGC), which are also known as locational or regional components, may experience a production change due to the comparative advantage of a region, institutional support, socio-economic infrastructure, and the local policies of a region. If the score of RSGC > 0, the sector can be considered as having a comparative advantage. Meanwhile if the score of RSGC < 0, the sector can be considered as having no comparative advantage or being non-competitive. Net Shift (NS) can be calculated by using the following formula:

$$NS = PGC + RSGC \quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad ....2)$$

$$NS = \left(\frac{Y_{it}}{Y_{io}} - \frac{Y_t}{Y_0}\right) + \left(\frac{y_{it}}{y_{io}} - \frac{Y_t}{Y_0}\right) \quad\quad\quad\quad\quad ....3)$$

Y_{it} is the value of the economic sector i in the province at the end of the analysis year. Y_{io} is the value of the economic sector i in the province at the beginning of the analysis year. Y_o is the value of all the economic sectors in the province at the beginning of the analysis year, while Y_t is the value of all the economic sectors in the province at the end of the analysis year. y_{it} itself is the value of the economic sector i in each regency/city at the end of the analysis year

and y_{i0} is the value of the economic sector i in each regency/city at the beginning of the analysis year. If the value of NS ≥ 0, the sector can be categorized as thriving, and if the value of NS < 0, the sector can be categorized as sluggish.

After the two values are determined, an overlay analysis was carried out to describe potential economic activities by using growth criteria and comparative advantage criteria (Dewi & Yasa, 2018). Economic sectors can be categorized as leading sector (priority), developing sector (second priority), potential sector (third priority), and underdeveloped sector (no need to be prioritized)

4. Analysis and Discussion
4.1 The LQ Analysis's Result

This research aims to help the Regional Government of Bali Province to identify the leading sectors in Bali with the hope that huge dependence on the tourism sector can be balanced with dependence on the leading sectors. In the past few decades, the economy of Bali has been dependent on the tourism sector, especially accommodation and restaurant businesses. However, what happened to the tourism sector after Bali Bombing 1 and Bali Bombing 2, the increase in the volcanic activity of Mount Agung, and the COVID-19 pandemic shows that the tourism sector is highly vulnerable to shocks. When shocks occur, the economy of Bali, which hugely depends on tourism, becomes very fluctuating.

By the National Spatial Plan developed through the Government Regulation No. 26 of 2008 regarding the National Spatial Plan, National Activity Centres in Bali Province have been established. The centres have been established the urban area of Denpasar, Badung, Gianyar, and Tabanan (the Area of Sarbagita) and the Area of Non-Sarbagita, which consists of the regencies of Buleleng, Jembrana, Karangasem, Bangli, and Klungkung. The criteria for the establishment of National Activity Centres are: (1) an urban area that functions as or has the potential to be the main node of export-import activities or a gateway to international areas, (2) An urban area that functions as or has the potential to be a center of industries and services at the national level or that serves several provinces, and/or, (3) an urban area that functions as or has the potential to be a main mode of transportation at the national level or that serves several provinces.

Results of the calculation of LQ show that Denpasar City and Gianyar Regency almost dominate the basic sectors in Bali Province. This is not surprising since Denpasar is the capital city of Bali and the center of all forms of economic activities, namely trade, processing industries, education, health, and various services. However, like other urban areas, only a little part of the Area of Sarbagita excels in the food sector. That little part is Tabanan Regency. The

regency excels in agriculture, livestock, and fisheries because it has a very large agricultural land and is the granary of Bali Province. Denpasar, Badung, and Gianyar excel in the sectors directly related to tourism. Therefore, those sectors can be made their basic sectors. However, the roles of the sectors declined a little in 2020 due to the COVID-19 pandemic, which has given a severe shock to the three regions. Denpasar, Badung, and Gianyar become the center for tourism development in terms of accommodation and tourism destinations. Kuta, Ubud, and Legian are very iconic tourist destinations that reflect the unique features of Indonesia, including Bali.

The research conducted by Putra & Yadnya (2018) also analyzed the LQ for the Area of Sarbagita from 2014 through 2016. A comparison of the results of the current research and those of their research shows that there is not a significant shift, which means that those sectors are basic sectors and their development is stable. A little change occurred in the sector of the provision of electricity and gas in the Badung Regency. The sector used to be basic, but in 2019 and 2020 it became non-basic. This might be due to the decline in the operation of big hotels, bars, and restaurants based in Badung. A study by (Suryaningsih & Suryawardani, 2021) shows the ability to survive star hotels in Badung Regency the period March 2020 to December 2020 can be said to be able to survive. Efforts made by star hotels in Badung Regency to stay afloat since the COVID-19 pandemic began, namely: first, in the field of promotion by lowering prices at OTA (online travel agents), pay now stay later, staycation, food promotion, and room promotion. Second, efforts in human resources are also carried out such as laying off employees with an unpaid leave (UL) system, cutting basic salaries up to 50 percent, terminating employees to reducing working days each month for employees. And, the last effort was carried out by implementing the CHSE protocol in each star hotel unit as well as completing a verification certificate based on the CHSE protocol.

In Tabanan Regency, the sector of information, which at the beginning was a basic sector, 2019 – 2020 became a non-basic sector. This shows that the COVID-19 pandemic has not shaken the comparative advantage of the sector of accommodation, food, and beverage services as a basic sector. Tabanan Regency is indeed superior in the field of food (Agriculture, Livestock, and Fisheries) because Tabanan Regency still has a very large agricultural land and rice granary in Bali Province. Based on the LQ calculation, the leading sub-sectors that can be developed in Tabanan Regency are Agriculture, Livestock, and Fisheries; Mining and Quarrying; Real Estate; Administration, Governance, Defence and Compulsory Social Security; Health Services and Social Activities; Other Services.

Results of the calculation of LQ show that all the regencies in the Area of Non-Sarbagita depend on primary sectors. Although the area is rich with tourism destinations, they are not managed optimally. Bali is rich with natural and cultural tourism destinations, but only some of them have been developed well. Therefore, there is a quite big gap between the Area of Sarbagita and the Area of Non-Sarbagita. The development of hotels, bars, restaurants, and other tourism-related services is centered in Denpasar, Gianyar, and Badung. The tourism destinations are spread evenly, but it is not the case with the accommodation services. The contribution from the sector is concentrated in the Area of Sarbagita as seen in Graph 1.

Graph 1. The Regional GDP of the Regencies and Cities in Bali Province at Constant Prices 2010 (IDR Billion).
Source: Bali Bureau of Statistics

Graph 1 shows that The Regional GDP of the Area of Sarbagita is relatively higher than that of the Area of Non-Sarbagita. The Regional GDPs of Badung and Denpasar is the highest, although they experienced a decline in 2020. The Regional GDPs of Badung and Denpasar are relatively higher than those of the other regencies, and they are followed by the Regional GDPs of Buleleng, Gianyar, and Tabanan. Buleleng is not part of the Area of Sarbagita, but its Regional GDP is quite high. This is due to the development of education in the regency in the form of the establishment of the Ganesha State University of Education, which is the second state university in Bali and continuously opens new study programs. Before the establishment of the university, there was only

one state university in Bali, which is the biggest university in Bali, i.e. Udayana University. Its campuses are located in Badung and Denpasar. Furthermore, the planned construction of a domestic airport in Buleleng has increased its economic activities. As is known, before Denpasar, Buleleng was the capital city of Bali Province.
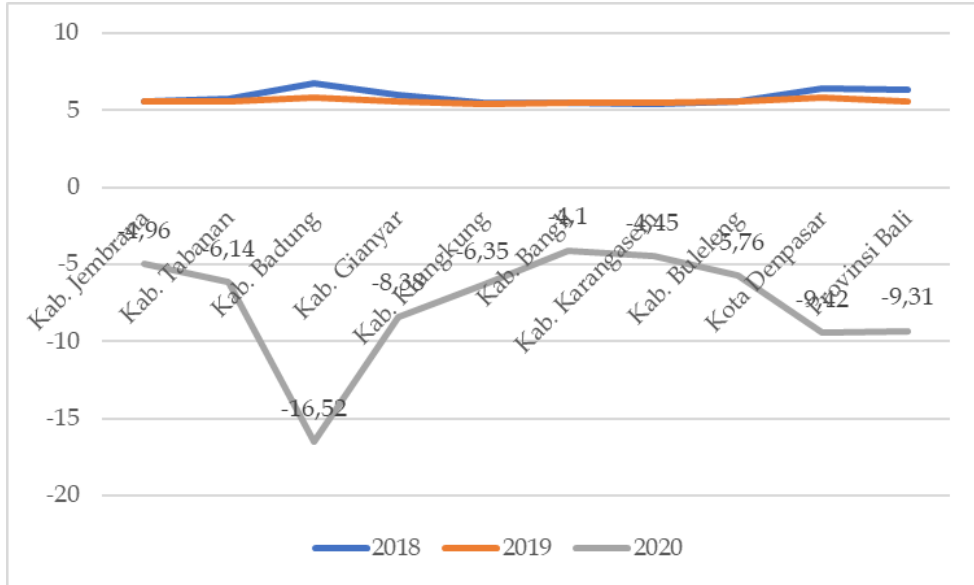
Graph 2. The Growth of the Regional GDP/Economy of the Regencies and Cities in Bali Province (Percent).
Source: Bali Bureau of Statistic

After the COVID-19 pandemic started, the economies of all areas in Bali experienced a slowdown by recording negative growth. The biggest economic decline, which is -16.52%, was experienced by Badung Regency in 2020. The Regional GDP (RGDP) of Badung Regency experienced the deepest contraction triggered by the performance of the Provision of Accommodation, Food and Beverage Services sector which grew negatively by 30.72% to Rp 6.89 trillion in 2020. Likewise, the Transportation and Warehousing sector contracted by 46.26% to Rp 3.48 trillion in 2020. Before the COVID-19 pandemic, Provision of Accommodation, Food and Beverage Services contributed 28.58% to the RGDP of Badung Regency. Meanwhile, the contribution of Transportation and Warehousing to Badung's RGDP is 26.03%. This was followed by Denpasar City and Gianyar Regency, with their economic contractions being -9.42% and 8.38% respectively. It can be seen that Badung, Denpasar, and Gianyar, which have tourism (especially the sectors of accommodation, food, dan beverage services) as basic sectors, experienced the lowest economic growth. In other words, they have experienced the sharpest contraction during the COVID-19 pandemic,

which is due to the drastic decline in the number of tourists visiting Bali. Because of all this, their contribution to the economy of Bali has also declined sharply.

4.2 The Net Shift Analysis's Result

Results of the Net Shift Analysis can be used to complement the results of the calculation of LQ to determine the superiority of an economic sector. The Net Shift Analysis assumes that the shift of the comparative advantage of an economic sector in an area (regency/city) is also influenced by the economy of the larger area of which it is a part (province. The results show that the sector of the provision of accommodation, food, and beverage services experienced a contraction in all the regencies and cities in 2020 because the value is less than zero. This shows that overall, the contribution of the sector to the economies of the regions has greatly shifted. Another sector that experienced contraction is transportation and warehousing. Transportation has been directly affected by the COVID-19 pandemic due to mobility restrictions and social distancing. The closure of many offices, the decline in the number of tourists, the ban on online transportation services, and restrictions on activities, especially at the beginning of the pandemic, have caused the sector to be directly impacted by the pandemic, resulting in its decline. The third sector that experienced a contraction in most of the regions is the provision of electricity and gas. This is due to the decline in hotel occupancy, restaurant activities, and the activities of other entities that before the pandemic used a relatively large amount of electricity and gas. Subadra (2021) said local regulations on cultural tourism were changed during the COVID-19 outbreak to strengthen the use of local culture for tourism by adapting tourism policies that respect indigenous Balinese culture Tri Hita Karana and Sad Kerthi which are the foundation of Bali's cultural tourism development

4.3 The Overlay Analysis's Result

Overlay analysis was then conducted to map sectors that have the potential to be developed during the current pandemic. The analysis was also used to see if there are sectoral shifts in each regency and city. Results of the mapping of each regency and city can be seen in Picture 1.
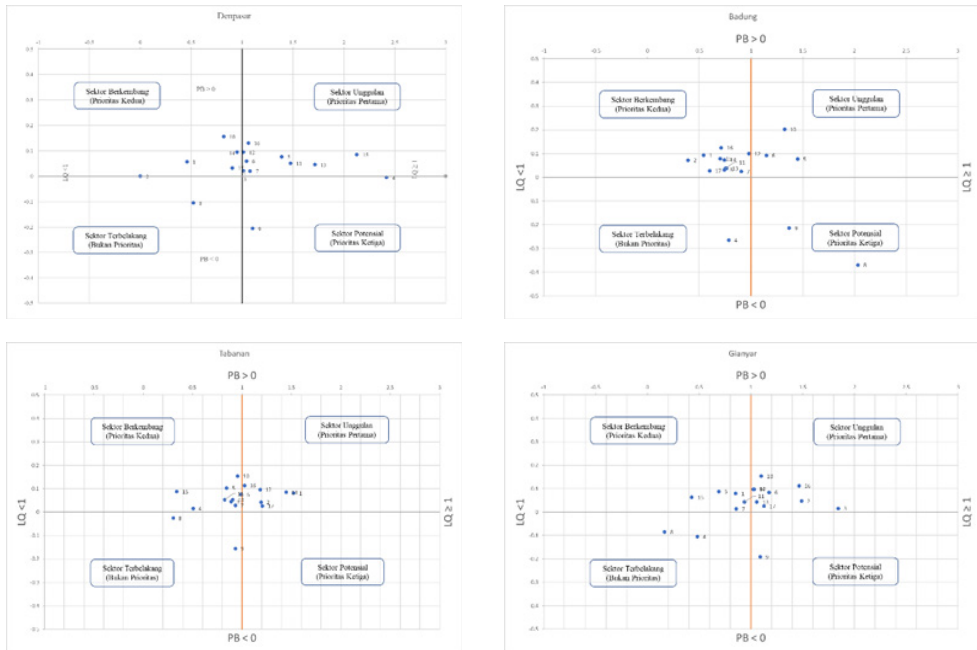
Picture 1. Overlay Analysis of the Economic Sectors in the Area of Sarbagita 2020.

Source: Processed Data.

Notes on Sectors: 1. Agriculture, Livestock, and Fisheries; 2. Mining and Quarrying; 3. Processing Industries; 4. Provision of Electricity and Gas; 5. Water Provision and Garbage, Waste and Recycle Management; 6. Construction; 7. Wholesale Trade and Retail Trade; Car and Motorcycle Repairs; 8. Transportation and Warehousing; 9. Provision of Accommodation, Food and Beverage Services; 10. Information and Communications; 11. Financial and Insurance Services; 12. Real Estate; 13. Corporate Services; 14. Administration, Governance, Defence and Compulsory Social Security; 15. Educational Services; 16. Health Services and Social Activities; 17. Other Services

One sector in Denpasar City that has experienced contraction and does not have any comparative advantage is transportation and warehousing. This is so because Denpasar, like several other cities and regencies, has experienced significant economic, environmental, and social difficulties caused by the mobility restrictions and social distancing implemented to curb the spread of the COVID-19 virus (ILO, 2020). The need for social distancing has recreated some forms of urban transportation. In several cities, the impact of the Covid-19 pandemic can be seen clearly. Like 'the bike revolution' which started in the Netherlands after the economic and social crisis in the 1970s, the current pandemic may become the most effective way to carry out sustainable mobility

in many polluted urban areas (Sorina Buzatu & Loredana Pianta, 2020). A study conducted by the Arab Trade Union Confederation (2020) proved that one year after the start of the COVID-19 pandemic, the sector of transportation is the most impacted economically. Travel restrictions implemented to curb the spread of the COVID-19 virus have hindered the ability of transportation companies to serve passengers in various places in the world. As a result, income in the sector of transportation has declined significantly, resulting in salary cuts or the dismissal of workers due to bankruptcy.

In the third quarter, some basic sectors had a comparative advantage but did not have any competitive advantage (Setiyawan, 2019). The sector of the provision of accommodation, food, and beverage services in Denpasar dominated the economy. However, its growth was slower than the growth of the other sectors. This is also the case with the sector of the provision of electricity and gas.

Denpasar still has many leading sectors whose development can be prioritized. Nine out of its 17 sectors are leading ones. The leading sector is educational services. The contribution of the Educational Services sector in Denpasar's RGDP reached 12.74% in 2020. This figure continues to increase from 11.18% in 2018, and 11.24% in 2019 (BPS Kota Denpasar, 2021). Denpasar is the capital city and the government center of Bali provides the most complete facilities to support its status as a student city. Most of the private and state schools and universities in Bali are based in Denpasar. Supporting infrastructure, including fast internet access, has contributed to making Denpasar a region with the highest Human Development Index (HDI). The HDI of Denpasar has been "very high" from 2012 up to the present (Wiratmini, 2021).

Other sectors that can be developed are water provision and garbage, waste and recycle management, financial and insurance services, and corporate services. One problem currently faced by Denpasar it's the waste problem. Waste management has to be prioritized by the Government of Denpasar due to a large number of its residents. Based on the 2020 Population Census, Denpasar is the region having the second largest population in Bali. The city's population is 725,314 people or 16.80% of the population of Bali (BPS Bali, 2021). Furthermore, due to the high number of economic activities and their need for transaction convenience, the sectors of financial services and corporate services become the right choices to help create the recovery of Denpasar's economy.

Results of the calculation show that in Badung Regency, the sector of the provision of electricity and gas is not a basic one and has experienced contraction during the COVID-19 pandemic. This reflects a big decline in the use of electricity and gas in Badung. In the regency, a lot of electricity and gas were used to support tourism. The declining electricity and gas demand by

tourism industries has been balanced with their demand by households.

In the southern area of Badung, one of the tourism centers in Bali, tourism is supported by an international airport, hotels, villas, man-made tourist attractions, night entertainment places, shopping centers, and cultural parks. Meanwhile, in the northern area of Badung, which is mountainous, tourism is supported by rafting tours, agrotourism, ecotourism, and village tourism. Although there has been no development of big accommodation services in the northern area of Badung, villas, and homestays have started to exist (Mahagangga et al., 2021).

Three leading sectors can be prioritized to support the economy of Badung, namely information and communications, water provision and garbage, waste and recycling management, and construction. Badung, Gianyar, Karangasem, and Tabanan are the regencies whose percentage of population distribution relative to the total population of Bali Province is over 10% (BPS Bali, 2021). Furthermore, settlement development has started to occur in the area of Badung because the area of Denpasar is already very crowded and the land of Badung is still highly available. Because of all this, it is not surprising that the three sectors become leading ones.

In Gianyar Regency, two sectors are non-basic and have experienced contraction, namely the sector of the provision of electricity and gas and the sector of transportation and warehousing. Both sectors have experienced contraction due to the decline in tourism performance. While in Badung, tourism is supported by star hotels, in Gianyar, tourism is supported more by culture and nature. Many Roads in Ubud are often jammed because they are narrow, but they are flanked by the shops of trinkets, paintings, carvings, silver crafts, and other crafts, which cause the area to be always crowded.

Gianyar has many leading sectors. Eight out of its 17 sectors are considered leading ones and, therefore, can be selected to be developed. The sectors having the highest scores are the sector of information and communications and the sector of processing industries. This is appropriate since the area of Ubud in Gianyar has been selected as one of the three green zones. The other zones are the area of Sanur in Denpasar and the area of Nusa Dua in Badung. The three areas have been assigned to the green zones to serve the international program of Work from Bali. Ubud has great potential to develop itself to be the center for cultural and educational tourism. Besides museums, Ubud also has several outstanding art galleries and tourism villages, including Adat Mas Village, which is famous for its wood carvings (Zaenal Nur Arifin, 2021).

In Tabanan Regency, two non-basic sectors have experienced contraction, namely the sector of transportation and warehousing and the sector of the provision of accommodation, food, and beverage services. This means that the

two sectors do not have any superiority and are not competitive (Setiyawan, 2019). However, seven sectors can be categorized as leading sectors. Out of the seven sectors, the ones that can be developed as basic sectors so that they have competitive advantages are agriculture, livestock, and fisheries; real estate; mining and quarrying; and some other sectors. Tabanan is a region with very large land for fields and farms suitable for various types of plants. It can be said that Tabanan is the granary of Bali. Like Gianyar, Tababan borders directly with Denpasar and Badung. This has made Tabanan a very ideal choice for settlement development. According to Ernest W Burgess in his work *Introduction to the Science of Sociology* (1921), people naturally tend to live closer to a town center. To accommodate such a tendency, concentric cities with the town center being the core have been developed (Malau et al., 2018).
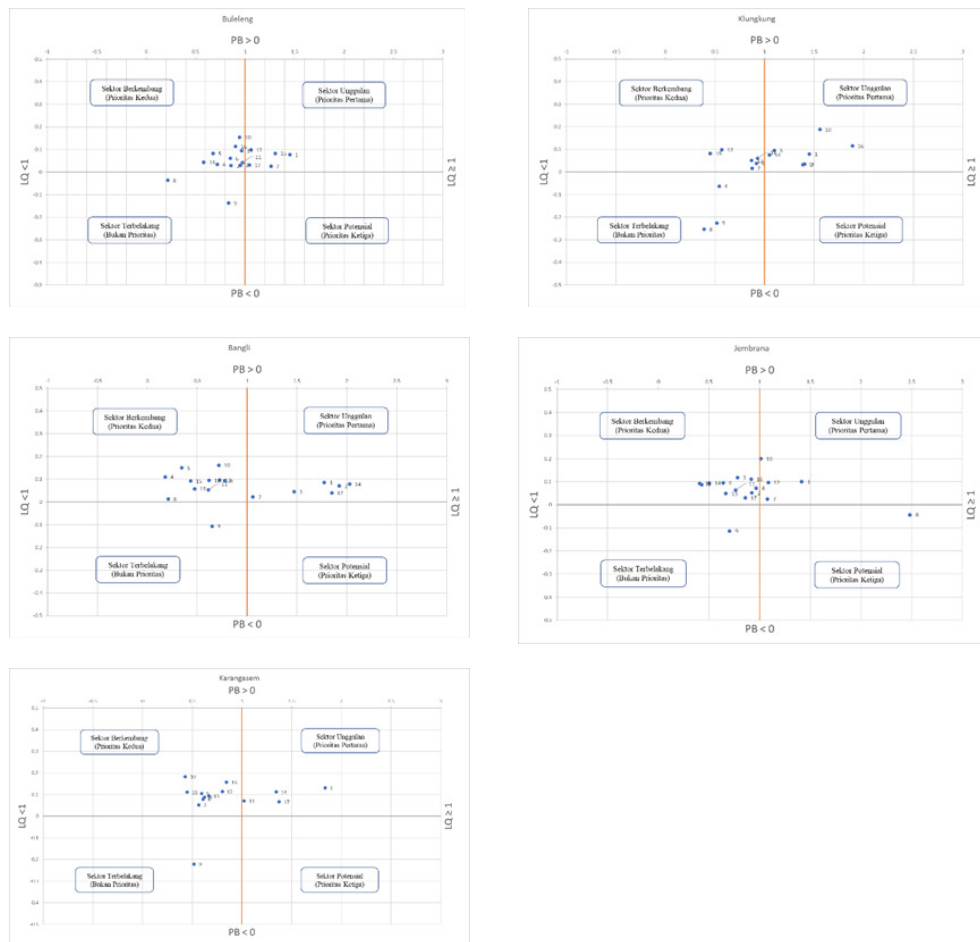
Picture 2. The Overlay Analysis of the Economic Sectors in the Area of Non-Sarbagita 2020

Results of the overlay analysis show that the characteristics of the economic sectors in the Area of Non-Sarbagita are different from those of the economic sectors in the Area of Sarbagita. In all the regions in the Area of Non-Sarbagita, agriculture is a potential sector. The sector of agriculture, livestock, and fisheries in Jembrana, Karangasem, Bangli, and Buleleng even has the highest superior value compared with the ones in the other regions. The culture of *Krama Bali* is reflected in the *Subak* system as a manifestation of the philosophy of *Tri Hita Karana*, a pearl of local wisdom with a very high cultural value admired by people from around the world. *Subak* as an agricultural system based on Balinese culture has been recognized and protected by UNESCO as a World Heritage. There are some other sectors, besides the sector of agriculture, livestock, and fisheries, that also become leading sectors in most of the regions in the Area of Non-Sarbagita. Each of the regions in the area indeed has different superior commodities.

The contribution of the sector of agriculture in Karangasem Regency to the Regional GDP of Bali Province is 14.74%, and about 50.61% of the population of Karangasem makes a living as a farmer. The regency has a high level of competitiveness in the sub-sectors of crops, such as rice, corn, sweet potato, cassava, peanuts, soybeans, and green beans (Widhianthini & Djelantik, 2019). Meanwhile, Bangli is the only regency in Bali that does not border any sea. Bangli has some promising tourism potential, including Mount Batur and Lake Batur. Bangli is the biggest of bamboo products and one of the producers of the best Arabica coffee in Indonesia. The coffee it produces is of high quality (Utami & Abundanti, 2019).

The research conducted by Akhmadi & Antara (2019) identified superior agricultural commodities of Klungkung, some of which are soybeans, corn, and cassava. In addition, Klungkung was ever successful in cultivating seaweed, but then the cultivation was left due to the domination of tourism (Suadnyana, 2021). Klungkung is one of the regions in Bali that have the potential for seaweed cultivation. In the regency, seaweed cultivation is carried out in Lembongan Village. The condition of its water is ideal for the growth of seaweed. Seaweed cultivation in the village has ever been a prima donna, generating big income for those running the business (Pradnyana & Nugroho, 2019).

Besides the sector of agriculture, there are several other leading sectors in each of the regions in the Area of Non-Sarbagita. Some of the leading sectors in Buleleng Regency are wholesale trade and retail trade, car and motorcycle repairs, educational services, and real estate. Buleleng is the location of the Ganesha State University of Education, which keeps growing. The development of educational services has boosted the development of the real estate, trade, and other sectors. Due to its status as the capital city of Bali Province before

Denpasar, it is not surprising that Buleleng is relatively more developed than the other regions in the Area of Non-Sarbagita. The plan for the construction of a domestic airport has also boosted those sectors.

Some of the leading sectors in Klungkung Regency that may boost its economy are health services and social activities, information and communications, and processing industries. Klungkung has recorded a significant increase in the health status of its residents. In 2019, the Government of Klungkung launched five innovative programs in the health sector. One of the programs is *Datangi Obati Rawat Kesehatan Masyarakat* (Dorkesmas) (Visit, Treat, and Take Care – the Health of the Public). Dorkesmas provides health services to community members who do not have access to health services. Dorkesmas is supported by adequate human resources, adequate equipment, and 11 health motorcycles. The service is for the community members who are unable to come to a Public Health Centre.

The sector of the provision of accommodation, food, and beverage services in all the regions has experienced contraction. The contraction in the regions in the Area of Non-Sarbagita has been caused by their inability to develop their tourism destinations, in addition to the COVID-19 pandemic. As a matter of fact, in the area, there are many tourism destinations famous as diving spots because they are rich with ornamental fish and coral reefs. Some of such tourism destinations are Lembongan and Nusa Penida in Klungkung, Candi Dasa and Tulamben in Karangasem, Pulau Menjangan in Jembrana, and Pemuteran in Singaraja. The sector of transportation and warehousing in Buleleng and Klungkung has also experienced contraction.

The positions of the distributed sectors as can be seen in the results of the overlay analysis above show that there are significant differences between the Area of Sarbagita and the Area of Non-Sarbagita. The economic sectors in the Area of Sarbagita tend to accumulate in quadrant two, and they are categorized to be leading sectors. This means that the area has many options that can be used to leverage the economy during the current pandemic. Meanwhile, the positions of the economic sectors in the Area of Non-Sarbagita tend to accumulate in quadrant one. This means that the sectors are categorized to be developing ones. They are considered so because their competitive and comparative advantages are still relatively low. The regional governments need to take measures to develop them to be leading sectors.

5. Conclusion

The COVID-19 pandemic has severely impacted all the countries in the world, including Indonesia. Bali is one of the regions hit hardest by the pandemic because its economic structure is dominated by tourism-related

services. The decline in the economic growth of Bali is the biggest compared with that of the other provinces in Indonesia. The tourism sector, which relies on the coming of tourists, has experienced contraction due to the mobility restrictions, social distancing, and lockdown implemented in several regions to curb the spread of the COVID-19 virus. The tourism-related sectors - the sector of the provision of accommodation, food, and beverage services and the sector of transportation and warehousing - have experienced a decline in all the regions, causing economic contraction.

Results of the analysis show that there is one sector that has become a leading one during the COVID-19 pandemic, i.e. the sector of agriculture, livestock, and fisheries. The regions will have many advantages if they develop the sector maximally to boost their economic growth. Besides maintaining food security and stability, the sector absorbs manpower in a very large number. Amid uncertainty about the end of the current pandemic, many tourism workers have had to find new jobs. Agriculture with 'a new form', which is under the topographical characteristics of each of the regions, can be developed. This kind of from is agricultural transformation towards agricultural digitalization (agriculture 4.0). The application of agricultural digitization on the upstream side is expected to change the way of farming, the behavior of farmers, and how inputs are provided. Then, digitizing the downstream side will expand market coverage, price efficiency, and product sales methods. Efforts to digitize agriculture have begun to be seen in Indonesia through various models and innovations such as vertical farming, precision farming, and smart farming, but they are still rare in Bali.

The results of this study indicate the importance of promoting economic recovery by exploring potential sources of economic growth. To see this potential, it is necessary to look at the economic structure of each region. The weakness of this study is that it is limited to using two-time points, namely 2019 - 2020 so it cannot see the dynamism of the structure. This study shows sectors that can be used as potential sources of economic recovery during a pandemic. Some of the major events that hit Bali in the tourism sector deserve to be considered in determining future policies. Activities in the agricultural and tourism sectors can be carried out simultaneously. This means that tourism or agriculture is not an option in the sense that more emphasis is placed on one sector by ignoring other sectors only because of temporary events. Thus, Bali can return to the tourism sector while still improving other sectors, such as agriculture.

Acknowledgment

This article has been written based on the results of research conducted as part of the Activities of the Research on Disasters "Ideathon Bali Kembali". The authors would like to express their gratitude to National Agency for Disaster Management, the Ministry of Research and Technology/ National Agency for Research and Innovation, the Ministry of Education and Culture, the Ministry of Home Affairs, the Ministry of Health, the Ministry of Tourism and Creative Economy, COVID-19 Task Force, the Committee for the Handling of COVID-19 and National Economic Recovery, and the Regional Government of the Province of Bali for their full support for the research. The authors also would like to thank the Institute for Research and Community Services (LPPM) of Udayana University for its cooperation.

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