

Analysis on Growth Pattern and Economic Sectors in Bali Province

Dewa Gede Sidan Raesyesa

School of Business and Economics, Universitas Prasetiya Mulya
dewa.sidan@pmbs.ac.id, raesyesa@gmail.com

Reinardus A. Suryandaru

School of Business and Economics, Universitas Prasetiya Mulya
reinardus.suryandaru@pmbs.ac.id

Yohanes Berenika Kadarusman

School of Business and Economics, Universitas Prasetiya Mulya
yohanes.kadarusman@pmbs.ac.id

Abstract

In decentralization system, understanding the characteristics of region's economy becomes necessary for productivity. In that regard, this descriptive study aims to describe the characteristics of the local economy in Balinese regencies and to identify the potential sectors to be developed therein. Using such methodologies as Klassen Typology, Location Quotient, Growth-Ratio Model, and Overlay analysis from year 2010 to 2016. As a result, we have found significant gap amongst regencies, where Badung and Denpasar are the most developed regencies, with high level both in growth rate and GDP per Capita. On the other hand, Klungkung, Jembrana, Bangli, Karangasem, and Tabanan are the least developed. Furthermore, it was found that most sectors in Bali are experiencing slow growth during the research period. By studying all the regencies in Bali province, this study not only enrich the existing literature but also recommend potential sectors from each region to be developed in order to reduce the development gap between regencies.

Keywords: Economic Structures, Regional Economics, Economic Development

Abstrak

Dalam sistem desentralisasi, memahami karakteristik ekonomi suatu daerah menjadi penting untuk meningkatkan produktivitas ekonomi. Sehubungan dengan itu, studi deskriptif ini bertujuan untuk memberikan gambaran karakteristik ekonomi lokal di provinsi Bali serta mengidentifikasi sektor-sektor potensial yang perlu dikembangkan. Penelitian ini menggunakan metode Tipologi Klassen, Location Quotient, Model Growth-Ratio, dan analisis Overlay dari tahun 2010 hingga 2016. Hasil penelitian menunjukkan adanya kesenjangan yang signifikan antar kabupaten di provinsi Bali. Kabupaten Badung dan Denpasar menjadi kabupaten yang paling maju dilihat dari tingkat laju pertumbuhan dan PDB per kapita yang tinggi. Di sisi lain, kabupaten seperti Klungkung, Jembrana, Bangli, Karangasem, dan Tabanan menjadi kabupaten yang mengalami tingkat pertumbuhan yang rendah. Selain itu, ditemukan bahwa sebagian besar sektor ekonomi di provinsi Bali mengalami perlambatan pertumbuhan selama periode penelitian. Studi ini menambah kekayaan literatur yang sudah ada dengan memasukkan seluruh kabupaten yang berada di provinsi Bali sebagai objek penelitian dan memberikan rekomendasi mengenai sektor-sektor ekonomi yang berpotensi untuk dikembangkan.

Kata Kunci: Struktur Ekonomi, Ekonomi Regional, Pembangunan Ekonomi

1. Introduction

Economic growth is essential for several reasons. First, it is acquired by utilizing various resources, from labor to natural resources, in an efficient and effective manner aimed at increasing the production capacity of the region. Second, it focuses on the quantitative side of any economic activities (Haller, 2012), which allows GDP to play an important role in the economic world with its capability to put everything into numbers and figures (Széll, 2011). Third, the rate of economic growth is one of the tools to measure a country's wealth and

standard of living. Nevertheless, the rate depends on the development of economic sectors that produce goods and services in a given regional area. Therefore, it becomes necessary to understand which economic sectors must be developed as key drivers for growth (Emilia, Syaifuddin, & Nurjanah, 2012).

Based on Article 18 in Chapter VI of The Constitution of The Republic of Indonesia, local governments in Indonesia have been granted an autonomy power to regulate and manage their own affairs. This implies that they have access to allocate

Table 1. Economic growth of Indonesia and Bali

Region	Year								
	2010	2011	2012	2013	2014	2015	2016	2017	2018
Indonesia	6.22	6.17	6.03	5.56	5.01	4.88	5.03	5.07	5.17
Bali	5.83	6.66	6.96	6.69	6.73	6.03	6.32	5.59	6.35

Source: Indonesian Statistics (2019)

resources in the region. However, the use of these resources needs to be conducted in an accountable manner in consultation with the central government (The Constitution of The Republic of Indonesia, p. 13-15, 1945). Consequently, development of a specific region does not only concern its regional leader and local society (Yao & Zhang, 2015), but also with the country’s overall development. In other words, regional autonomy may foster economic growth and development in and within districts (Panjiputri, 2013).

As national development consists of contributions from many districts, an understanding of regional characteristics becomes important to assess the performance of any given region. One way to measure it is by looking at the Growth Regional Domestic Product (GRDP) and the economic sectors in the respective region (Subanti & Hakim, 2009).

During the period of 2010-2018, Bali showed a promising economic growth with the 6.45 percent average. It was higher than that of Indonesia’s overall economic growth, which accounted for merely 5.46 percent. This indicates that Bali’s economy performed better than the national economy in the past 8 years.

The main contributing sectors to Bali province’s GRDP have been industry, food and accommodation, which constituted 23.34 percent of the overall GRDP (Indonesia Statistics Bureau, 2019). The average y-o-y growth rate of Bali’s GRDP by industry in the same period was dominated by food and accommodation (7.03%); information and communication (7.87 percent); education services (8.57 percent); health and social services (8.62 percent); and other businesses (7.04 percent). These data show that Bali’s economy depended heavily on tourism (Cole, 2012; Antara & Sumarniasih, 2017).

Therefore, based on the explanation above, this study is conducted to deepen the understanding of the economy in Bali region. Our research aims to describe the characteristics of the economic structure in the Bali region and identify potential sectors as the key drivers for growth in each district. The organization is as follows: following the introductory section is a literature review. Section 3 presents methodology and data. Section 4 shows the empirical findings of our analyses. Finally, sections 5 and 6 present discussions and conclusions respectively

2. Literature Review

According to Arsyad (Arsyad, 1999), regional economic development is a process in which the region’s leaders work together along with the citizens to manage the current local resources. To illustrate, this work could be done by creating an extensive partnership between a regional government and the private sector, aiming to cultivate economic sectors, generate new jobs, and stimulate growth. For those purposes, the government would exercise its work through several roles: firstly, as a business stakeholder by which the regional authority can explore the potential sectors and resources for the economic or business purposes; secondly, as a mandatory facilitator and stimulator, by which it can improve the development process by accommodating a number of society’s interests. In addition to that, as a stimulator, the authority can encourage and stimulate the process for creating new economic opportunities (Arsyad, 1999); thirdly, as a coordinator of the policies implementation within the region, the authority can monitor public issues (e.g. unemployment, job opportunities, etc.) and ensure success. Moreover, as some studies have underlined, a country’s economic growth success depends on its efforts in managing resources--especially in arranging, constructing, and assessing economic activities in certain districts with an efficient and effective manner. The efforts become all the more important due to regional differences in terms of economic resources and characteristics (Muhardi & Hadi, 2007). Furthermore, according to Kuznets (Kuznets, 1973), economic growth within a country may be described as its capability to produce an extensive amount of goods to the population using progressive technology and institutions that support the production activities.

Since economic growth consists of contribution from various economic sectors, any structural change that occurs in a sector can alter its respective contribution. Changes in economic structure can be indicated by major shifts in economic activities, namely from agriculture to non-agriculture sectors, followed by technological development. It has been argued that transformation in an economic structure starts to happen when contribution from the manufacturing sector is higher than that from the agricultural. The transformation is followed by significant changes in industrial formation within the economy (Todaro & Smith, 2011) and will im-

pact several aspects such on as export-import activities and utility of production factors (Kesuma & Utama, 2015).

An understanding of the economic structure would benefit governments not only in their policy implementation (Herath, Gebremedhin & Maumbe, 2011), but also in the identification of prominently economic sectors potential to be developed (Riantika & Utama, 2017). For this reason, it is imperative that districts be developed on the basis of their potentials and the availability of economic resources (Muhardi & Hadi, 2007)

Bali, as well as a few districts in Indonesia, has a peculiar economic characteristic that is based on tourism activities (Antara & Sumarniasih, 2017). This makes Bali has a unique source of growth compared to other provinces in Indonesia. Quite a few scholars have conducted empirical research of Bali's regional economic growth. They mainly focused on economic expansion and diversification (such as: Erawati, 2012; Kesuma and Utama, 2015; Antara et al, 2017; Riantika and Utama, 2017; Susila, 2017; Andriyani and Utama, 2017; Mardiana et

al., 2017; Darmajaya et al, 2018). Moreover, their studies focused on a single district for each study. As summarized from the literature review on Table 2.1, most researchers used Location Quotient (LQ), Klassen Typology and Shift Share analyses in their methodology. Their findings underlined that most of Bali's regencies still concerned traditional sectors (i.e. agriculture, mining, and manufacturing). Badung and Gianyar regencies were exceptions in that they already started transitioning into higher and more modern economic development. This was truly the case since Badung, Gianyar and Denpasar economically dependent on tourism and services (Antara & Sumarniasih, 2017).

Our study aims to improve and expand the previous literature by extending the area of analysis to include all of the nine regencies in Bali and by designating a longer time range of studies compared to those of the previous literature. The findings from this study can benefit the local governments in formulating bottom-up regional development policies and will enrich the existing literature reviews on regional economic development for Bali Province.

Table 2. A Summary: Empirical studies on regional economies in Bali

Author	Location	Method	Findings
Kesuma and Utama (2015)	Klungkung District (2008-2012)	LQ, Shift Share	Shifting economic structure from agriculture sector to service sector
Antara et al. (2017)	Badung District (2011-2016)	LQ, Dynamic LQ, and Shift Share	Basis sectors: Water supply, Sewerage, Waste Management and Recycling; Construction; Transportation and Warehousing; Provision of Accommodation and Drinking; Information and Communication
Riantika and Utama (2017)	Gianyar District (2011-2015)	LQ, Dynamic LQ, the Growth Rate Model, Overlay	Leading sectors: Accommodation and Food Service Activities; Real Estate Activities; Human Health and Social Work Activities
Susila (2017)	Buleleng District (2010-2013)	Klassen Typologi, LQ, and Schallogram	Basis sectors: Agriculture, Manufacturing, Business Activities Klassen Typology Type I: Agriculture
Darmajaya et al (2018)	Bangli (2011-2015)	LQ, Dynamic LQ, Shift Share	Basis sector: Agriculture The economic structure of Bangli District tends to be transformed towards secondary and tertiary economies
Andriyani and Utama (2015)	Karangasem District (2008-2012)	Klassen Typology , LQ , and Gravity Model	Klassen Typology Type I: Sub-district of Manggis and Karangasem Basis sectors: Agriculture, Manufacturing, Mining and Quarrying
Mardiana et al (2017)	Tabanan District (2010-2015)	Shift Share, LQ, the Growth Rate Model, Klassen Typology	Structural economic shifting from agricultural to non-agricultural Dominant economic sectors: Agriculture; Mining and Quarrying; Construction; Information and Communication; Real Estate Activities; Public Administration and Defence; Compulsory Social Security; Human Health and Social Work Activities
Erawati (2012)	Klungkung District (2008-2010)	Klassen Typology, LQ, Growth-Ratio Model, Overlay	Dominant economic sectors being construction and services

Table 3. Categories of Klassen Typology

GDP Regional per Capita/ Growth Rate	Ydi > Yni	Ydi < Yni
rdi > rni	Group 1	Group 2
	Developed Region	Developing Region
rdi < rni	Group 3	Group 4
	Developed Region, with slow growth	Underdeveloped Region

Source: Kuncoro, 2004, p. 118

Whereby:

Ydi = Regional GDP per capita in ‘i’ district

Yni = Regional GDP in the province (Bali)

rdi = Growth Rate in ‘i’ district

rni = Growth Rate in the province (Bali)

3. Research Methodology

Methodology

We use four analytical techniques, namely Klassen Typology, Location-Quotient (LQ), Growth Ratio Model (GRM), and Overlay, each of which is described as follows:

Klassen Typology

Klassen Typology analysis is often used to understand the economic development condition of a region. In this approach, the region in question is analyzed based on two main indicators: its regional economy per capita and economic growth rate (Kuncoro, 2004).

Location Quotient Analysis (LQ)

In general, the study of regional economics attempts to identify and evaluate the economic activities within a region. It is important to identify the primary or basic economic sectors due to its capacity to undertake export activities and promote the region's economic growth (Soepono, 2001; Sutawijaya & Zulfahmi, 2013). LQ analysis identifies a region's export capacity and its self-sufficiency level (Arsyad, 1999). The region's economic activities are then classified into two clusters. The first cluster is Basic Industries, in which industries are managed to fulfill and serve the market demand within and outside the region. The second cluster is Non-Basic Industries, for those industries that only have capacity to serve the market demand within the regional market. LQ analysis assumes that when basic industries manage to sell their products in the bigger market, they will generate higher income to the economic area. As a result, this creates positive spillover effect by increasing demand towards non-basic industries that lead to better investment within both types of industries accordingly. For this reason, it is

important to identify and develop basic industries in any given region. The LQ calculation formula is presented as follows (Arsyad, 1999):

$$LQ = \frac{v_i/v_t}{V_i/V_t} \frac{v_i/V_i}{v_t/V_t}$$

Whereby:

v_i = Growth Regional Domestic Product (GRDP) from ‘i’ sector at the district

v_t = Total of GRDP in ‘t’ district

V_i = GRDP of Province from ‘i’ sector

V_t = GRDP of Province (Bali)

When the values of LQ is greater than one ($LQ > 1$), economic sectors are thus categorized as basic industries. However, when the value of LQ is lower than one ($LQ < 1$), the sectors involved are categorized as non-basic industries. By so doing, contributions of the regional economic sector to the national economy from the same sector can be measured.

Growth-Ratio Model

The Growth-Ratio Model produces two concepts of calculation. The first one is RPr, which compares the growth of i-th economic sector to the Gross Regional Domestic Product (GRDP). The second concept is RPs, which compares the growth of i-th economic sectors in a specific district to the growth of i-th economic sector in a region—in this case, Bali Province. By so doing we are able to classify each economic sector according to its dominance. The formula to calculate GRM is presented as follows:

$$RPr = (\Delta P_i R / P_i R_t) / (\Delta PR / PR_{(t)})$$

$$RPs = (\Delta P_{ij}/P_{ij(t)})/(\Delta P_iR/P_iR(t))$$

Whereby:

ΔP_iR = an incremental change of the province's GRDP in 'i' commodity

P_iR_t = the production value (GRDP) of commodity 'i' at initial time of research.

ΔPR = an incremental change of Province's GRDP

$PR(t)$ = Province's GDRP at initial time of research

ΔP_{ij} = an incremental change in GRDP of region 'j' on 'i' commodity

$P_{ij(t)}$ = GRDP in 'i' commodity at region 'j' at the initial time of research

ΔP_iR = an incremental change of Province's GRDP in commodity

$P_iR(t)$ = production value (GRDP) of commodity 'i' at initial time of research

If the value of $RPr > 1$ ($RPr < 1$), the growth of *i*-th sector in the corresponding district is higher (lower) than the Bali's Province GDP (GRDP). On the other hand, if the value of $RP_s > 1$ ($RP_s < 1$), then the growth of *i*-th sector in the corresponding district is higher (lower) than Bali Province's GDP (GRDP) for *i*-th sector. The results of both RPr and RP_s can be classified into 4 categories (Yusuf, 1999):

- Category 1: $RPr (+)$ and $RP_s (+)$. It reveals that the *i*-th sector has a dominance both in the corresponding district and Bali's economic activities.
- Category 2: $RPr (+)$ and $RP_s (-)$. It reveals that the *i*-th sector has a dominance only in Bali's economic activities.
- Category 3: $RPr (-)$ and $RP_s (+)$. It reveals that the *i*-th sector has a dominance only in the corresponding district's economic activities.
- Category 4: $RPr (-)$ and $RP_s (-)$. It reveals that the *i*-th sector neither has a dominance in the district nor in Bali's economic activities.

Overlay Analysis

An Overlay Analysis is conducted to describe the economic potency based on the growth of *i*-th sector in the corresponding district and its contribution to Bali's overall economy. For economic contribution analysis, we use the average value of LQ within 2010-2016 period, while for growth analysis we use the average value of RPs from MRP analysis between 2010 and 2016 period. Moreover, this analysis may yield 4 possible groups of outcome (Yusuf, 1999):

- Group 1: the *i*-th sector in the corresponding district has a high growth and contribution to Bali Province's overall economy
- Group 2: the *i*-th sector in the corresponding district has a high growth but less contribution to Bali Province's overall economy
- Group 3: the *i*-th sector in the corresponding district has a low growth despite a high contribution to Bali Province's overall economy
- Group 4: the *i*-th sector in the corresponding district has both low growth and contribution to Bali Province's overall economy

Data sources

In this study, two main variables are used, namely the GRDP based on economic sectors for all of 9 districts in Bali and the GRDP based on economic sectors in Bali Province with time range between 2010 and 2016.

4. Result

Klassen Typology

In accordance with the results of analysis using Klassen Typology, two districts enjoy high economic development: Badung and Denpasar. These districts have high and positive economic growth rate per capita. Gianyar and Buleleng districts also have a decent economic growth rate respectively despite showing a lower per capita level. Moreover, the rest of the districts, which include Tabanan, Jembrana, Klungkung, Bangli, and Karangasem, are categorized as underdeveloped due to the low level of GDP per capita and growth rate.

Table 4. Summary: Klassen Typology Analysis in Bali (2010-2016)

GDP Regional per Capita/Growth Rate	Ydi > Yni	Ydi < Yni
	Group 1	Group 2
r_{di} > r_{ni}	Badung, Denpasar	Gianyar, Buleleng
	Group 3	Group 4
r_{di} < r_{ni}		Tabanan, Jembrana, Klungkung, Bangli, Karangasem

Source: Authors' own calculation (2019)

Table 5. A Summary: Location Quotient Analysis in Bali (2010-2016)

Economic Sector	Region			
	Badung	Denpasar	Gianyar	Buleleng
Agriculture, Livestock, Forestry and Fishery				√
Mining and Quarrying			√	√
Manufacturing Industry		√	√	
Electricity and Gas		√		
Water Supply, Waste and Recycling Management	√	√		
Construction	√	√	√	
Trade, Retail, and Reparation		√		√
Transport and Warehousing	√			
Food and Accomodation	√	√	√	
Information and Communication	√	√	√	
Finance and Insurance Services		√		√
Real Estate		√	√	√
Business Services		√	√	
Government Administration and Defence				√
Education Services		√		√
Health and Social Services		√	√	
Other Businesses			√	√

Location Quotient

Based on the Location Quotient analysis, we have identified several promising sectors to be developed in each district:

- Badung: water supply, waste and recycling management; construction; transportation and warehousing; food and accomodation; information and communication.
- Denpasar: manufacturing industry; electricity and gas; water supply, waste and recycling

management; construction; trade, retail, and reparation; food and accomodation; information and communication; finance and insurance services; real estate; business services; education services; health and social services.

- Gianyar: mining and quarrying; manufacturing industry; construction; food and accomodation; information and communication; real estate; business services; health and social services; other businesses.

Table 6. A Summary: Location Quotient Analysis in Bali (2010-2016)

Economic Sector	Region				
	Klungkung	Jembrana	Bangli	Karangasem	Tabanan
Agriculture, Livestock, Forestry and Fishery	√	√	√	√	√
Mining and Quarrying	√		√	√	√
Manufacturing Industry	√		√		
Electricity and Gas					
Water Supply, Wasteand Recycling Management	√				
Construction		√			√
Trade, Retail, and Reparation		√	√		
Transport and Warehousing		√		√	
Food and Accomodation					
Information and Communication	√	√			√
Finance and Insurance Services				√	
Real Estate		√			√
Business Services					
Government Administration and Defence			√	√	√
Education Services					
Health and Social Services	√				√
Other Businesses	√		√	√	√

- Buleleng: agriculture, livestock, forestry and fishery; mining and quarrying; trade, retail, and reparation; finance and insurance services; real estate; government administration and defence; education services; other businesses.

Furthermore, despite the deficiency in the economic progress, several economic sectors in Bali's least developed districts can be developed and enhanced, as indicated below:

- Klungkung: agriculture, livestock, forestry and fishery; mining and quarrying; manufacturing industry; water supply, waste and recycling management; information and communication; health and social services; other businesses.
- Jembrana: agriculture, livestock, forestry and fishery; construction; trade, retail, and reparation; transport and warehousing; information and communication; information and communication; real estate.
- Bangli: agriculture, livestock, forestry and fishery; mining and quarrying; manufacturing industry; trade, retail, and reparation; government administration and defence; other businesses.
- Karangasem: agriculture, livestock, forestry and fishery; mining and quarrying; transport and warehousing; finance and insurance services; government administration and defence; other businesses.

- Tabanan: agriculture, livestock, forestry and fishery; mining and quarrying; construction; information and communication; real estate; government administration and defence; health and social services; other businesses.

Growth Ratio Model

We have sorted the results of MRP analysis into 4 categories in Table 7. Overall, the most dominance sectors in category 1 are: electricity and gas; construction; trade, retail, and reparation; information and communication; finance and insurance services; food accommodation; government administration and defence; education services; health and social services; and other businesses. These 10 sectors have dominance in each district and throughout the province. Still, 4 sectors are clusterable into category 4; they are: agriculture, livestock, forestry and fishery; mining and quarrying; water supply, waste and recycling management; and business services.

Overlay Analysis

In general, the results from Table 8 show that construction, information and communication, and other businesses do show high growth and contribute significantly to the economy of Bali. On the contrary, sectors with low growth and low contribution to Bali's economy are business services, water supply, as well as waste and recycling manage-

Table 7. A Summary: Growth Ratio Model Analysis in Bali (2010-2016)

Economic Sectors	Category			
	1	2	3	4
Agriculture, Livestock, Forestry and Fishery	-	-	-	All of region
Mining and Quarrying	-	-	-	All of region
Manufacturing Industry	-	-	E,I	A,B,C,D,E,F,G,H
Electricity and Gas	A,B,C,D,E,F,G,H	I	-	-
Water Supply, Waste and Recycling Management	-	-	-	All of region
Construction	All of region	-	-	-
Trade, Retail, and Reparation	All of region	-	-	-
Transport and Warehousing	E,F,G,H	A,B,C,D,I	-	-
Food and Accomodation	A,C,D,E,F,G,H,I	B	-	-
Information and Communication	All of region	-	-	-
Finance and Insurance Services	All of region	-	-	-
Real Estate	-	-	B,F,G,H	A,C,D,E,I
Business Service	-	-	-	All of region
Government Administration and Defence	All of region	-	-	-
Education Services	All of region	-	-	-
Health and Social Services	All of region	-	-	-
Other Businesses	A,C,D,E,F,G,H,I	B	-	-

Source: Author's own calculation (2019). Note: Badung (A), Denpasar (B), Gianyar (C), Buleleng (D), Klungkung (E), Jembrana (F), Bangli (G), Karangasem (H), Tabanan (I).

Table 8. A Summary: Overlay Analysis of Bali, 2010-2016 (1)

Economic Sectors	Group 1	Group 2	Group 3	Group 4
Agriculture, Livestock, Forestry and Fishery	-	D,E,F,G,H,I	-	A,B,C
Mining and Quarrying	-	C,D,E,G,H,I	-	AF,B
Manufacturing Industry	E	B,C,G	I	A,D,F,H
Electricity and Gas	B	-	A,C,D,E,F,G,H	I
Water Supply, Waste and Recycling Management	-	A,B,E	-	C,D,F,G,H,I
Construction	A,B,C,F,I	-	D,E,G,H	-
Trade, Retail, and Reparation	B,D,F,G	-	A,C,E,H,I	-
Transport and Warehousing	F,H	A	E,G	B,C,D,I
Food and Accomodation	A,C	B	D,E,F,G,H,I	-
Information and Communication	A,C,E,F,I	-	B,D,G,H	-
Finance and Insurance Services	B,D,H	-	A,C,E,F,G,I	-
Real Estate	B,F	C,D,I	G,H	A,E
Business Service	-	B,C	-	A,D,E,F,G,H,I
Government Administration and Defence	D,G,H,I	-	A,B,C,E,F	-
Education Services	B,D	-	A,C,E,F,G,H,I	-
Health and Social Services	B,E,I	-	A,D,F,G,H	C
Other Business	D,E,G,H,I	-	A,F	B,C

Source: Author's own calculation (2019). Note: Badung (A), Denpasar (B), Gianyar (C), Buleleng (D), Klungkung (E), Jembrana (F), Bangli (G), Karangasem (H), Tabanan (I).

ment. In the district level, Denpasar has the highest number of highly growing sectors and high economic contribution to Bali province's overall economy. On the other hand, 10 out of 17 sectors in Bangli have low growth despite their high contribution to Bali's overall economy.

Discussion

The results shown in the previous section indicate that there is a significant disparity in the development among regencies. As shown by Klassen typology only two districts have high development growth and income per capita (Badung &

Table 9. A Summary: Overlay Analysis of Bali, 2010-2016 (2)

District	Number of Sectors				Total Sectors per Region
	Category 1	Category 2	Category 3	Category 4	
Badung	3	2	7	5	17
Denpasar	7	4	2	4	17
Gianyar	3	4	5	5	17
Buleleng	5	3	5	4	17
Klungkung	4	3	8	2	17
Jembrana	5	1	7	4	17
Bangli	3	3	9	2	17
Karangasem	4	2	8	3	17
Tabanan	5	3	5	4	17
Total Sector per Category	39	25	56	33	

Source: Author's own calculation (2019)

Denpasar), whereas five out of nine are grouped into least developed regencies (Klungkung, Jembrana, Bangli, Karangasem, Tabanan). In other words, the majority of regencies in Bali are underdeveloped. Changes that have occurred in Klungkung district are most interesting. As previous research (Erawati & Yasa, 2012) found, the district belonged to the third group whereby the district had slower economic growth but high per capita income. However, using the same methodology with different series of time we have found that Klungkung district has classified into the fourth group (the least developed) with low levels of both per capita and economic growth. It may indicate that several challenges have hindered economic activities in Klungkung district.

Meanwhile, based on Location Quotient we have found that most of the least developed regencies have agriculture and mining as their potential economic sectors to be developed. It may tell us that the least development districts still count on farming and extractive industries. On the other hand, the developed regencies (Badung and Denpasar) count more on food and accommodation, construction, information, and communication as their dominant sectors to be yet further developed.

Using the Growth-Ratio Model we have found that all the regencies in Bali province have no difference in terms of their dominant sectors to be developed. The sectors with decent growth range from: construction, trade, retail and reparation; information and communication; finance and insurance services; education services; government and defense; to healthcare and social services. However, all the regencies in Bali are experiencing lower growth in agriculture, mining and business services.

Overall, based on overlay analysis, we have found that most of the economic sectors (56 sectors in total) across the entire regencies in Bali are classified under the third group. It means that these sectors show low growth despite their decent contribution to Bali province's economy. Moreover, it indicates that Bali province's overall economy were slowing down during the research period (Bank Indonesia, 2016). On the other hand, Denpasar has stood as the region with the highest number of potential economic sectors to be developed.

5. Conclusions & Recommendation

This study aims to describe the characteristic of regional economy in Bali regencies by using Klassen Typology and identify the potential sectors to be developed from each district by using Overlay Analysis. The findings from Klassen Typology analysis confirm that two regencies (namely Badung and Denpasar) have high development growth and income per capita. On the other hand,

five out of nine regencies (Klungkung, Jembrana, Bangli, Karangasem, Tabanan) are categorized as the least developed. Our Overlay Analysis has identified that the potency of economic sectors to be developed further for each district in Bali is as follows:

- Badung: construction; food and accommodation; communication and information
- Denpasar: Electricity and gas; construction; trade, retail and reparation; finance and insurance service; real estate; education services; health and social services.
- Gianyar: construction; food and accommodation; communication and information
- Buleleng: trade, retail, and reparation; financial and insurance services; government administration and defense; education services; other businesses
- Klungkung: manufacturing industry; information and communication; health and social services; other businesses
- Jembrana: Construction; trade, retail, and reparation; transport and warehousing; information and communication; real estate.
- Bangli: Trade, retail, and reparation; government administration and defense; other businesses.
- Karangasem: transport and warehousing; finance and insurance services; government administration and defense; other businesses.
- Tabanan: Construction; information and communication; government administration and defense; health and social services; other businesses.

In terms of regional development, the study shows that the province of Bali has significant gaps between one region to another. This unequal development may hinder the regional economic performance in the future. Therefore, it would be beneficial for the government of Bali to decrease the gap by developing the other regions, especially the least developed one. The government could start with developing the appointed sectors that found from this study. It is necessary to increase the sector's productivity by implementing technology and improving human capital quality. Training and skills provisions that compatible with technology adoption are important to enhance the region's economic productivity.

However, this descriptive study does not explain the underlying reason for each region's economic growth performance. In addition to that, it would be necessary to use longer time range than the time span used at this study. With longer period, it will reduce the possibility to have negative economic growth rate during the analysis in Growth Rate Model (Yusuf, 1999).

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Appendix

Region	Badung				Denpasar				Gianyar			
	LQ		MRP		LQ		MRP		LQ		MRP	
	Value	Sign	Value	Sign	Value	Sign	Value	Sign	Value	Sign	Value	Sign
Agriculture, Fishing, Forestry	0.51	-	0.48	-	0.49	-	0.32	-	0.89	-	0.39	-
Mining and Quarrying	0.31	-	0.75	-	0.05	-	-2.03	-	1.53	+	0.66	-
Manufacturing	0.69	-	0.86	-	1.08	+	0.67	-	1.86	+	0.88	-
Public Utilities (Electricity and Gas)	0.98	-	1.14	+	2.19	+	1.16	+	0.50	-	1.43	+
Water Provision, Waste and Recycling services	1.35	+	0.59	-	1.40	+	0.60	-	0.71	-	0.54	-
Construction	1.04	+	1.10	+	1.02	+	1.16	+	1.24	+	1.12	+
Wholesale and retail trade; Vehicle's repair	0.86	-	1.02	+	1.08	+	1.06	+	0.88	-	1.12	+
Transportation and Storage	2.49	+	0.85	-	0.43	-	0.96	-	0.14	-	0.90	-
Accommodation, Food and Beverages	1.33	+	1.09	+	1.21	+	0.95	-	1.05	+	1.14	+
Information and Communication	1.18	+	1.21	+	0.81	-	1.20	+	1.14	+	1.27	+
Finance and Insurance	0.70	-	1.35	+	1.50	+	1.29	+	0.97	-	1.26	+
Real Estate	0.84	-	0.98	-	1.02	+	1.02	+	1.08	+	0.91	-
Business Services	0.74	-	0.83	-	1.78	+	0.88	-	1.07	+	0.96	-
Government administration, Security, and Social security	0.68	-	1.30	+	0.95	-	1.26	+	0.99	-	1.33	+
Education services	0.69	-	1.29	+	2.18	+	1.29	+	0.46	-	1.37	+
Health and other social services	0.65	-	1.49	+	1.05	+	1.54	+	1.50	+	1.52	+
Other services	0.53	-	1.00	+	0.98	-	0.92	-	1.14	+	1.01	+

Region	Buleleng				Klungkung				Jembrana			
	LQ		MRP		LQ		MRP		LQ		MRP	
	Value	Sign	Value	Sign	Value	Sign	Value	Sign	Value	Sign	Value	Sign
Agriculture, Fishing, Forestry	1.46	+	0.52	-	1.55	+	0.43	-	1.38	+	0.41	-
Mining and Quarrying	1.09	+	0.86	-	3.82	+	0.46	-	0.82	-	0.91	-
Manufacturing	0.87	-	0.93	-	1.35	+	1.03	+	0.75	-	0.93	-
Public Utilities (Electricity and Gas)	0.63	-	1.23	+	0.53	-	1.01	+	0.63	-	1.01	+
Water Provision, Waste and Recycling services	0.71	-	0.59	-	1.08	+	0.54	-	0.48	-	0.48	-
Construction	0.91	-	1.20	+	0.92	-	1.52	+	1.04	+	1.27	+
Wholesale and retail trade; Vehicle's repair	1.32	+	1.04	+	0.91	-	1.09	+	1.17	+	1.05	+
Transportation and Storage	0.18	-	0.86	-	0.39	-	1.08	+	2.05	+	1.30	+
Accommodation, Food and Beverages	0.78	-	1.14	+	0.52	-	1.25	+	0.66	-	1.13	+
Information and Communication	0.97	-	1.36	+	1.61	+	1.22	+	1.01	+	1.21	+
Finance and Insurance	1.04	+	1.29	+	0.92	-	1.51	+	0.75	-	1.39	+
Real Estate	1.13	+	0.83	-	0.57	-	0.98	-	1.18	+	1.02	+
Business Services	0.61	-	0.92	-	0.94	-	0.81	-	0.70	-	0.88	-
Government administration, Security, and Social security	1.03	+	1.30	+	0.99	-	1.45	+	0.51	-	1.35	+
Education services	1.34	+	1.55	+	0.45	-	1.56	+	0.40	-	1.50	+
Health and other social services	0.97	-	1.52	+	1.92	+	1.65	+	0.94	-	1.59	+
Other services	1.13	+	1.06	+	1.40	+	1.02	+	0.88	-	1.01	+

Region	Bangli				Karangasem				Tabanan			
	LQ		MRP		LQ		MRP		LQ		MRP	
	Value	Sign	Value	Sign	Value	Sign	Value	Sign	Value	Sign	Value	Sign
Agriculture, Fishing, Forestry	1.74	+	0.56	-	1.81	+	0.41	-	1.50	+	0.49	-
Mining and Quarrying	1.99	+	0.80	-	3.24	+	0.91	-	1.07	+	0.80	-
Manufacturing	1.46	+	0.99	-	0.62	-	0.93	-	0.87	-	1.02	+
Public Utilities (Electricity and Gas)	0.15	-	1.41	+	0.43	-	1.01	+	0.51	-	0.82	-
Water Provision, Waste and Recycling services	0.29	-	0.68	-	0.67	-	0.48	-	0.83	-	0.53	-
Construction	0.80	-	1.37	+	0.63	-	1.27	+	1.05	+	1.28	+
Wholesale and retail trade; Vehicle's reparation	1.13	+	1.15	+	0.62	-	1.05	+	0.97	-	1.20	+
Transportation and Storage	0.17	-	1.06	+	1.98	+	1.30	+	0.23	-	0.89	-
Accommodation, Food and Beverages	0.59	-	1.07	+	0.45	-	1.13	+	0.94	-	1.03	+
Information and Communication	0.75	-	1.34	+	0.59	-	1.21	+	1.01	+	1.37	+
Finance and Insurance	0.61	-	1.50	+	1.04	+	1.39	+	0.86	-	1.32	+
Real Estate	0.72	-	1.02	+	0.97	-	1.02	+	1.22	+	0.94	-
Business Services	0.51	-	0.97	-	0.69	-	0.88	-	0.91	-	0.93	-
Government administration, Security, and Social security	2.13	+	1.28	+	1.53	+	1.35	+	1.39	+	1.39	+
Education services	0.45	-	1.54	+	0.46	-	1.50	+	0.34	-	1.56	+
Health and other social services	0.66	-	1.52	+	0.86	-	1.59	+	1.06	+	1.66	+
Other services	1.80	+	1.14	+	1.33	+	1.01	+	1.06	+	1.10	+