

A COMPARATIVE ANALYSIS OF REGIONAL DEVELOPMENT IN SABAH AND SARAWAK: AN ANALYSIS WITH SHIFT SHARE TECHNIQUES

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ABSTRACT

The aim of this research is to investigate the employment competitive advantages in five sectors which are agriculture, hunting, forestry and fishing, mining and quarrying, manufacturing, construction, and services in Malaysia, Sabah and Sarawak from 2005 to 2015. The employment across sectors in Sabah and Sarawak has been the major concern that urges us to conduct this research. Specifically, this research studies the effect of sector gross domestic product (GDP) on regional employment conditions. In analysing towards the employment competitive advantages, shift share analysis was utilized. The result shows that from 2005 to 2015, Sarawak has its competitive advantage shift from manufacturing to construction and services sector while maintain in mining and quarrying sector. Whereas in Sabah, the employment competitive advantage appears in almost all sector while competitive disadvantage shift from manufacturing to mining and quarrying from 2005 to 2015. The finding recommends that government should emphasis in improvement of infrastructure for better regional development. Other than that, it is suggested that government should have efficient capital allocation in expansion of high value added industries, goods and services while promoting tourism development.

Keywords: Employment, Regional Development, Sabah, Sarawak, Shift Share Techniques.

INTRODUCTION

The highest percentage of ethnic population among the Malaysia citizens is Bumiputera (68.6%) followed by Chinese which consists the percentage of (23.4%), Indians (7.0%) and others (1.0%). The population of Malaysia increase over the years while the average annual population growth rate shows a drop from 2012 (1.60%) to 2015 (1.50%).

Table 1

Employment of Malaysia (Labour Force), 2012 and 2015

	2012 ('000)	2015 ('000)
Labour force	13,221.70	14,667.80
Employed	12,820.50	14,163.70
Unemployed	401.20	450.30

Sources: Department of Statistics, Malaysia

Data shows the employment of 13.2 million in 2012 and 14.7 million 2015. The labour force participation rate (LFPR) shows an increase in 2015, which is 67.90% from 65.6% in 2012. It also shows that the male LFPR (80.60%) was still higher than the female LFPR (54.10%) in 2015, and 80.50% and 49.50% in 2012 respectively. Based on the Department of Statistic Malaysia stated the unemployment rate in 2015 shows a slight increase, which is 3.10% compared with 3.00% three years ago.

Background of Sarawak State

The land coverage area in Sarawak is about 124,450 km^2 (Department of Statistic Malaysia, 2015). There are more than 40 ethnic groups in Sarawak which consists of their particular distinct ethics, language and customs. Apart from Bahasa Malaysia, English is the official language of main national administration in Sarawak (Tawie, 2015).

Table 2
Population of Sarawak (2012 and 2015)

Population	2012 (million)	2015 (million)
Male population	1.33	1.41
Female population	1.24	1.28
Total population	2.57	2.70
Population growth (Annual %)	1.60	1.40

Sources: *Department of Statistic, Malaysia*

Data shows an increase of total population in Sarawak from 2012 (2.57 million) to 2015 (2.70 million). The male population are higher compared to female population in Sarawak. According to Malaysia Human Development Report 2013 (UNDP, 2014), the largest population of Sarawak and the major ethnic groups are Ibans (29%), followed by Chinese (25.4%), Malays (22.2%) and others (23.4%).

Table 3
Employment of Sarawak (Labour force), 2012 and 2015

	2012 ('000)	2015 ('000)
Labour force	1,184.90	1,258.30
Employed	1,143.90	1,214.80
Unemployed	41.00	43.50
Labour force participation rate (%)	69.4	68.4

Source: *Department of Statistic, Malaysia*

Table 4
Labour Force Participation Rate (%) of National and Sarawak, 2015

	Male (%)	Female (%)
National	80.2	54.3
Sarawak	82.7	52.4

Source: *Department of Statistic, Malaysia*

As shown in Table 4, there are the labour force participation rate, LFPR (%) of National and Sarawak. It shows that the Sarawak male LFPR (82.7%) is higher compared to in

National (80.2%) in 2015 while female LFPR in National (54.3%) is much higher compared to Sarawak (52.4%). Hence, the LFPR in Sarawak (68.4%) shows higher percentage as compared to National (67.9%) in 2015.

Data shows the Sarawak unemployment rate (3.5%) was higher compared to National (3.1%) in 2015. With a great labour force participation rate in Sarawak, it shows a highly competitive labour force of Sarawak.

Background of Sabah State

Sabah is also located on the Borneo Island which is the northern portion. Approximately, there are 32 ethnic groups which consist of their own culture, customs and languages respectively. Three main ethnic groups in Sabah are Kadazan-Dusun (25%), followed by Bajau (15%), Murut (3%) and others (57%). There is an increase of the total population of Sabah from 2012 and 2015. However, the average annual population growth rate shows a decrease of 1.4% in year 2015.

Table 5
Employment of Sabah (Labour Force), 2012 and 2015

	2012	2015
Labour force ('000)	1,627.9	1,863.4
Employed ('000)	1,537.4	1,771.1
Unemployed ('000)	90.5	92.3
Labour force participation rate (%)	67.6	69.5

Source: Department of Statistic, Malaysia

Table 6
Labour Force Participation Rate (%) of National and Sabah, 2015

LFPR	Male (%)	Female (%)
National	80.2	54.3
Sabah	86.1	51.2

Source: Department of Statistic, Malaysia

The Table 6 above shows the labour force participation rate, LFPR (%) of National and Sabah in 2015. The male LFPR

in Sabah (86.1%) was higher compared to National (80.2%) while the female LFPR in Sabah (51.2%) was lower compared to National (54.3%). Overall, based on Table 5 shows the labour force participation rate (LFPR) in Sabah (69.5%) is higher compared to National (67.9%). This is mainly because of the high populations in Sabah which eventually leads to the competitiveness between the labour force of Sabah. In order to survive, the citizens are actively compete with others in searching for a job. Hence, the LFPR in Sabah shows a higher percentage as compared to National.

Table 7
Unemployment Rate of National and Sabah, 2012 and 2015

Unemployment	2012 (%)	2015 (%)
National	3.0	3.1
Sabah	5.6	5.0

Source: Department of Statistic, Malaysia

Table 7 shows the National and Sabah unemployment rate in 2012 and 2015. The Sabah unemployment rate is higher compare to National in 2012 and 2015, which is 5.4% and 3.4% respectively. However, with the labour participation rate in Sabah, which is 69.5% in 2015. This situation leads to more competitiveness between the labour force. Hence, the unemployment rate of Sabah (5.0%) was higher compared to National (3.1%) as shown.

Problem Statement

As in corresponding to New Economic Model (NEM) unveiled in 2010, Malaysia aspires to achieve with high income level and become as a developed-nation status by 2020. In transformation of Malaysia, the National Transformation Programme (NTP) was unveiled to implement the NEM. The NTP comprises two components and one is the Economic Transformation Programme (ETP) (Performance Management & Delivery Unit (PEMANDU), 2017). By having commitment of large infrastructure projects and great amount of investment capital, Economic Transformation Programme helps improve and provide impetus for Malaysia's economy (Leong, 2013).

Malaysia's economy grown at an average of 5.1% per year since 2010, twice the average growth of the world economy in the same period. Based on the table and figures shown, the contribution of primary sector in Sabah had the highest GDP of 48.15% which approximately half of the state total contribution of GDP. As compared to Malaysia which primary sector contributed only 18.96%, Sabah had higher GDP contribution from primary sector. It is clearly to be seen that economic activity in Sabah mainly rely on primary sector. Therefore, workforce would be mainly concentrate on primary sector. The same situation occurred in Sarawak where the primary sector is recorded as the main economic sector with GDP contribution of 36.40%. Other than primary sector, tertiary sectors in Sabah and Sarawak play an important role as the second largest sector contribution of GDP regionally. The tertiary sector had contributed 40.49% in Sabah and 33.07% in Sarawak respectively. In comparison, the tertiary sector of Malaysia had contributed about 58.63% of GDP. It was known as the largest sector which drive the nation economy and believe that it has provides most of the job opportunities. Economy of Sabah and Sarawak were relied on primary sector. In related to employment opportunities, most of the workforce would involve themselves in primary sector. This causes some arguments regarding the workforce development of Sabah and Sarawak in relation to in Malaysia. Therefore in order to analyse towards the regional employment competitive advantages, shift share analysis is used in this research.

The objective of this research was to utilise Shift-share analysis in analysing the industrial mix characteristics and its local competitiveness potential factors for employment condition in corresponding to respective sectoral development in the state of Sabah and Sarawak to analyse the relationship between sectoral development and employment:

- To determine the Nation Share of Sabah and Sarawak.
- To determine the Industry Mix of Sabah and Sarawak.
- To determine the Regional Shift of Sabah and Sarawak.

This research is significant as the shift share analysis was been used in analysis; contribute to have an accurate and precise evaluations on the relationship between sectoral GDP and

employment regionally. By examining to the current situation of regional economy in Sarawak and Sabah, the study able to provide an identification of the economy dynamic in the state. Readers will eventually have ideas about which sector was the main sector of contribution in relation to the employment. In addition, the study able to provide information and advises in supporting to policy implication where the government was concerning about workforce development in Sabah and Sarawak.

LITERATURE REVIEW

Shift-share model is a standard model used in regional analysis. It was first developed by Daniel Creamer in 1943 then summarized by Edgar S. Dunn in 1960 (Shi & Yang, 2008). Shift-share model was introduced by Dunn in 1960. It was used shift share analysis to work on data that relates to employment and job. It was also used as a measure on employment and regions of the data to describe different gaps between regional growths.

According to the studies of Hassan, Rashid, & Hamid (2011), the shift share model can be divided into three components. They are the national growth, industrial mix and competitive share. The national growth is a baseline value for growth of expected output. The industrial mix is computed by GDP value of change in addition or subtraction in the country special industrial mix. Competitive share GDP change addition or subtraction to determines the competitiveness of the local firm to their unique sector. The total of these three components is same to the sum change of GDP in the country during a given period.

In Malaysia, for instance, it has used the same method to define alternative export market while Zakaria (2011) also utilised this method to approach Kelantan on the data GDP to analyse the performance of Kelantan economy (Hassan, Rashid, & Hamid, 2011).

Mondal (2009) implies that the employment growth uses aggregate variables to explain the growth of GDP or employment in association with the population migration and real income due to local initiatives and the community of a

special structure regional. The employment growth in a particular sector can be divided into three components which are national growth (NG), industrial mix (IM), and competitive share (CS) or also define as regional shift (RS) (Mondal, 2009). Hassan, Rashid & Hamid (2011) and Zakaria (2011) are using the shift-share analysis to determine the competitive advantages of East Malaysia Economic Region and Malaysia. The result shows that the East Malaysia Economic Region is less attractive. However, the primary and secondary sectors of East Malaysia Economic Region are able to grow as same level. According to AuYong (2012) Penang is a rapidly growing region that primarily dependent upon the services and manufacturing industries up to 2000 and 2005 to advance its economic development. From the analyses, significant implications on the economy of Penang are firstly, the key to sustaining robust economy expansion will continue to emphasize on high value-added electronics sectors, and secondly, higher growth in the tertiary sectors could be obtained if greater efforts were made to expand the information and communication technology industry. In addition, the performance of economic growth in Penang was analysed for the period of 2004 to 2008 by AuYong (2014). It was concluded that it was more crucial and central to make effort to raise labour productivity as well as to improve the absorptive capability, such as the education achievements of labour force.

In Europe area, Goschin (2014), Blien, Eigenhuller, Promberger & Schanne (2013), Fritz & Streicher (2005), and Blien & Wolf (2002) had analyzed the regional development in Romania, Bavaria, Austria, and Eastern Germany respectively by using shift-share approach.

METHODOLOGY

This paper is using secondary data for the analysis. The data used, which is total number of employment of Sabah, Sarawak, number of employment of Sabah, Sarawak based on five sectors (agriculture, mining and quarry, manufacturing, construction, and services), GDP of Sabah, Sarawak, and Malaysia based on five sectors, are taken from Department of Statistic Malaysia. The time period used for the analysis is from

2005 to 2015. However, because of the nature of data, this paper has rescaling the data with base year of 2005.

Shift-share model is able to determine the factors of employment growth (whether it is growing or declining) in a regional industry based on three components, which are national growth share (NS), industrial mix share (IMS) and regional shift (RS) (Sentz, 2011). The relationship is shown as below:

Shift-share = National growth share (NS) + Industrial mix share (IMS) + Regional shift (RS)

National growth rate (NS)

National growth rate means the rate of economy would grow if it performed in exactly the same way as the national economy. The calculation is shown as below:

$$NS_i = e_i^{t-i} \left(\frac{E_i^t}{E_i^{t-1}} \right)$$

Industrial mix share (IMS)

Industrial mix share can be explained as the local economy made up if different sectors from the national economy. The calculation is shown as below:

$$IMS_i = e_i^{t-1} \left[\left(\frac{E_i^t}{E_i^{t-1}} \right) - \left(\frac{E^t}{E^{t-1}} \right) \right]$$

Regional shift (RS)

Regional shift has been divided into two share where it is local share and competitive share. Local share explained as the employment change that is due to favourable local conditions and actions that support particular sector. The calculation is shown as below:

$$CS_i = e_i^{t-1} \left[\left(\frac{e_i^t}{e_i^{t-1}} \right) - \left(\frac{E_i^t}{E_i^{t-1}} \right) \right]$$

Where,

e : Community employment

i : Sector

E : National employment

t : Time period

RESULTS

Table 8 shows the change in employment and percent change. The sector can be divide into 5 sector which it is Agricultural, hunting, forestry and fishing, Mining and quarrying, Manufacturing, Construction and Services sector.

Table 8
Employment data of Malaysia by sector, 2005-2010.

	2005	2010	Change in employment	Percent change
Total employment	10,045,400	11,899,500	1,854,100	18.46%
Agricultural, hunting, forestry and fishing	1,740,400	1,614,900	144,500	9.83%
Mining and quarrying	36,100	57,200	21,100	58.45%
Manufacturing	1,989,300	2,108,500	119,200	5.99%
Construction	904,400	1,082,700	178,300	19.71%
Services	5,645,200	7,036,200	1,391,000	24.64%

Table 9
Employment data of Sarawak by sector, 2005-2010.

	20 05	2010	Change in employment	Percent change
Total Employment	910,900	1,045,600	134,700	14.79%
Agricultural, hunting, forestry and fishing	276,100	298,500	22,400	8.11%
Mining and quarrying	6,100	10,300	4,200	68.85%
Manufacturing	107,400	139,100	31,700	29.52%
Construction	83,900	98,700	14,800	17.64%
Services	437,400	499,000	61,600	14.08%

Table 9 shows the change in employment and percent change in employment of Sarawak by sector. As shows, the employment percent change in manufacturing sector of Sarawak was higher than the Malaysia, means that Sarawak

manufacturing sector is growth faster than the national, Malaysia manufacturing sector between year 2005 and 2010. Sarawak economy from agricultural base economy developed into Manufacturing based economy. Thus, manufacturing sector required more workers for producing electric and electronic, foods, chemical and others. Other than that, Sarawak also a state that have many timber productions. Sarawak government encouraged the timber company can product the log into board, wooden bench, wooden block, tables and other high value added products. The increased of the manufacturing activities required many of the workers. This is why the employment percent change for manufacturing sector in Sarawak increased higher than Malaysia.

Table 10
Shift share components of Sarawak, 2005-2010.

	National share	Industry Mix	Regional Shift	Actual employment growth change
Agricultural, hunting, forestry and fishing	50,960	-23,827	-4,733	22,400
Mining and quarrying	1,126	2,439	635	4,200
Manufacturing	19,823	-13,388	25,265	31,700
Construction	15,486	1,055	-1,741	14,800
Services	80,732	27,045	-46,177	61,600
Country national growth share/ country industrial mix	168,127	-6,676	-26,751	134,700
share/country regional shift				

Table 10 shows the national share, industry mix, regional shift and actual employment growth change. The regional shift of Sarawak in Mining and quarrying and Manufacturing sector have positive sign, which means that these two sectors have faster growth in Sarawak compared to Malaysia. From the discussion above, shows the Manufacturing sector in Sarawak was growth faster than national manufacturing sector between year 2005 and 2010.

National share can be explained as the amount of the regional industry's growth is clarified by the overall health of the national economy. If the country's entire economy is developing, it can be expected have positive change in every industry in the country (Mikissick, 2017). It also indicates employment development that would have happened if a sector in a country or local economy had developed at same rates as the national economy. As to Sarawak, national share in all sectors is positive (Herath, Gebremedhin & Maumbe, 2012). Depend to the result, the services sector's employment have the larger contribution for the total employment compared to the other sectors' employment. If the same rate of national share have been calculated, the change in employment would be larger in those sector in Sarawak.

The general national development component demonstrates that, if the Sarawak's economy was same to the Malaysia's economy, then the number of jobs in Malaysia should have increased by 168,736 between year 2005 and year 2010. Yet, the data indicates that the Sarawak only increased 134,700 jobs during this period. This result also can expect that Sarawak is not performing as well as the Malaysia's average.

The industrial mix measures the amount of local or regional employment sector development compared to the national employment development. It can be utilized as a part of identifying the quick or slow developing sectors or industries in an economy. A positive industrial mix in a specific local employment sector shows that it is developing quicker than the national economy. In the event that the industrial mix is negative, the sector is developing at a slower rate compared to the national economy (Herath, Gebremedhim & Maumbe, 2012). The country industrial mix share of -7,051 means that Sarawak has nearly 7,051 less number of jobs than it would have if its structure were same to Malaysia. Mining and quarrying, construction and services are developing quicker than the Malaysia's average, while the Agricultural, hunting, forestry and fishing and Manufacturing are developing slower.

The regional shift is the most important of the three indicators, as it clarifies the amount of the change in a given industry is because of some extraordinary competitive advantage

that the region possesses, because the development cannot be clarified by national tendency in that industry or the economy as entirety. It can be calculated by taking the total regional growth and subtracting the national growth and industrial mix effects. This effect can be higher than actual job growth if national and/or industry mix effects are negative while regional growth is positive (Mckissick, 2017). In addition, positive regional shift demonstrates the comparative advantage for a region in a particular sector. A positive local share joined with a positive industrial mix demonstrate a potential comparative advantage in that sector. A negative regional shift demonstrates that the local economy is losing its offer to different regions.

As indicated by the country regional shift, -30,375 new jobs in Sarawak are owing to its relative competitive position. Sarawak itself lost larger part of employment development than the Malaysia did overall. Furthermore to overall development, the analysis also can utilized to look at how individual sector have fared competitively. As indicated, Mining and quarrying and Manufacturing have positive regional shift in Sarawak. It also indicate these two sector have comparative advantage in economic development in Sarawak between 2005 and 2010. The negative regional shift is in Agricultural, hunting, forestry and fishing, Construction and sectors.

The added up of the national share, industrial mix and regional shift equal to the actual employment growth change in a particular region. The national share and industrial mix are determined exogenously and together make the share of economic development of the region while the regional shift shows up as the only endogenous component in the model (Herath, Gebremedhin & Maumbe, 2012). The actual total employment growth in 5 years (2005-2010) is 131,400 in Sarawak. Services sector always the highest contribution in Sarawak economy. The sector created 61,600 jobs in the Sarawak's economy within year 2005 and year 2010. Manufacturing sector reported as the second highest contribution.

Table 11 shows the employment data, change in employment and percent change for Malaysia by Agricultural, hunting, forestry and fishing, Mining and quarrying,

Manufacturing, Construction and Services sectors between 2010 and 2015.

Table 11
Employment data of Malaysia by sector, 2010-2015.

	2010	2015	Change in employment	Percent change
Total employment	11,899,500	14,067,700	2,168,200	18.22%
Agricultural, hunting, forestry and fishing	1,614,900	1,753,900	139,000	8.61%
Mining and quarrying	57,200	104,400	47,200	82.52%
Manufacturing	2,108,500	2,322,700	214,200	10.16%
Construction	1,082,700	1,309,900	227,200	20.98%
Services	7,036,200	8,576,800	1,540,600	21.90%

Table 12 demonstrate the employment data for Sarawak for year 2010 and 2015. It also shows the change in employment and percent change between the 5 years' time. As shows, the employment percent change of Sarawak in Mining and quarrying, Construction and Services sectors have higher percent change compared to Malaysia in these three sectors. The Mining and quarrying sector have 110.68% of changes between year 2010 and 2015, compare to Malaysia Mining and quarrying sector only 82.52% of changes between year 2010 and 2015. Malaysia have lower growth in Mining and quarrying sector. Mining and quarrying sector in Sarawak include oil and gas. Sabah transport the natural gas to Bintulu, Sarawak for processing. The downstream activity like building a LNG plant can attract more foreign investment into Sarawak economy. Thus, with attracting foreign direct investment, have higher jobs opportunities. Building new LNG plant required more workers to work with the company.

Furthermore, the employment percent change, 36.47% in Sarawak for Construction sector is higher than Malaysia, 20.98%. For the Construction sector, improving of infrastructures in Sarawak required more workers to build roads. For example, Pan-Borneo Highway that can travel from Sindumin in Sarawak to Tawau in Sabah. Moreover, building of

housing also will need a lot of workers to contribute. The housing projects in Sarawak also increased.

The services sector employment percent change in Sarawak also higher compare to Malaysia. It means that Sarawak services sector have growth faster compare to Malaysia. Malaysia government encourage the local and foreign tourists come to Malaysia travel. Whole Malaysia include Sarawak and Sabah have many beautiful and natural place to travel. For example, Niah National Park and Gunung Mulu National Park in Sarawak are introduce to local and foreign tourists. In 2001, Mulu National Park was professed a UNESCO World Heritage Site. It attracted many tourists come to Sarawak travel. The increased of tourists need more workers in services sector to serve them. The increased of tourists also would increases the hotels and homestay in Sarawak. The required for more workers increased the employment between year 2010 and 2015.

However, Manufacturing sector of Sarawak have -4.96% change while Malaysia have 10.16% change. The negative change of Manufacturing sector of Sarawak means that the manufacturing sector using high-tech machine to do the assembly and doing the products. Thus, using manpower decreased in manufacturing sectors. Manufacturing depending high-tech machine.

Table 12
Employment data of Sarawak by sector, 2010-2015.

	2010	2015	Change in employment	Percent change
Total employment	1,045,600	1,214,800	169,200	16.18%
Agricultural, hunting, forestry and fishing	298,500	304,400	5,900	1.98%
Mining and quarrying	10,300	21,700	11,400	110.68%
Manufacturing	139,100	132,200	-6,900	-4.96%
Construction	98,700	134,700	36,000	36.47%
Services	499,900	621,800	121,900	24.38%

Table 13 shows the shift share components with national share, Industrial mix, regional shift and actual employment

growth change for Sarawak between 2010 and 2015. The result shows the Mining and quarrying, Construction and Services sector have positive sign in the regional shift. The positive sign regional shift means that the Sarawak's sectors economy is growth faster than the Malaysia. Therefore, the Mining and quarrying, Construction and Services sectors have growth faster than Malaysia sectors economy.

Table 13
Shift share components of Sarawak, 2010-2015.

	National share	Industrial mix	Regional shift	Actual employment growth change
Agricultural, hunting, forestry and fishing	54,390	-28,697	-19,793	5,900
Mining and quarrying	1,877	6,623	2,900	11,400
Manufacturing	25,345	-11,214	-21,031	-6,900
Construction	17,984	2,728	15,288	36,000
Services	90,922	18,335	13,543	122,800
Country national growth share/ country industrial mix share/ country regional shift	190,518	-12,225	-9,093	169,200

Between year 2010 and 2015, Sarawak's national share in all sector also positive. It also larger contribution in services' sector. The entire national growth component indicates that, if the Malaysia's economy was same to the Sarawak's economy, then the quantity of jobs in Malaysia should increase by 207,407. Yet, the data indicates that Sarawak only increased 169,200 jobs during this period. It also expect that Sarawak is not performing as well as the Malaysia's average.

Basic on the calculation in Table 13, the country industrial mix share of -12,225 means that Sarawak has nearly 12,225 less jobs than it would have its structure were same to Malaysia. Agricultural, hunting, forestry and fishing (-28,679) sector in Sarawak indicates a negative industrial mix shows a slower growth rate compared to the Malaysia employment

development. Moreover, the Mining and quarrying (6,623), Manufacturing (-11,214), Construction (2,728) and Services (18,335) sector shows a positive industrial mix indicating a quicker development between year 2010 and 2015.

Furthermore, the country national regional shift, -9,093 jobs in Sarawak are owing to its relative competitive position. Sarawak itself lost larger part of employment development than the Malaysia did overall. Sarawak's regional shift in Agricultural, hunting, forestry and fishing and Manufacturing sectors are negative. Mining and quarrying, Construction and Services sectors in Sarawak indicate positive regional shift shows its comparative advantage in economic development.

The actual total employment growth in 5 years (2010-2015) is 136,789 in Sarawak. Services sector mainly report as the highest contribution to actual employment growth. The Services sector have created 122,799 jobs in the Sarawak's economy within the last 5 years (2010-2015). The second highest contribution in Construction sector, it's created 36,000 opportunities jobs in Sarawak.

Table 14
Employment data of Sabah by sector, 2005-2010.

	2005	2010	Change in employment	Percent change
Total employment	1,106,800	1,398,600	291,800	26.36%
Agricultural, hunting, forestry and fishing	373,600	492,100	118,500	31.72%
Mining and quarrying	2,600	5,000	2,400	92.31%
Manufacturing	123,300	122,000	-1,300	-1.05%
Construction	88,900	115,600	26,700	30.03%
Services	518,400	663,900	145,400	28.05%

The next table is table 14, it shows the number of employment in the 5 sector of Sabah for 2005 and 2010. The table also demonstrate the change in employment and percent

change of Sabah employment. The total employment percent change for Sabah, 26.36% was higher compare with Malaysia total employment percent change, 18.46% between year 2002 and 2010. The economy in Sabah is more developed in Sabah. All sector percent change for Sabah is higher than Malaysia except manufacturing sector. Agricultural, hunting, forestry and fishing sector employment percent change was higher compare to Malaysia. These sector in Sabah have higher percent change means the economy in this sector have growth faster than Malaysia. The fresh sea water in Sabah have produce many type of seafood. The fisherman increase in these 5 years due to Sabah have attracting many local and foreign tourists went to Sabah travel and eat their seafood. Especially the tiger prawn, it is Sabah famous seafood. Malaysia government had some regulation that fisher need to fulfil which are the net holes sizes cannot larger than the sizes that government have been required.

Moreover, the Mining and quarrying employment percent change of Sabah, 92.31% was greater than Malaysia, 58.45% change. The oil and gas company required a lot of skilled workers help them to find more places that have oil and gas. For the Construction sector, the employment percent change in Sabah is higher than the employment percent change for Malaysia. The reason of employment percent change in Construction sector is higher because of the building of the house is increasing. More and more of the house built in Sabah, have faster development in built up house compare with Malaysia. The building of house need to be done with manpower, cannot depend on the machine. Thus, these sector need many workers to build the house.

Last but not least, the Services sector employment percent change, 28.05% also higher than the Malaysia employment percent change, 24.64% between year 2005 and 2010. One of the reasons why the Services sector employment increased due to Sabah have Kinabalu Park and Mount Kinabalu as the famous places to travels. The tourists went there need to rent hotels or homestay. It need people to do work in hotel industry, hotels need to hire workers. Other than that, tourists went to Sabah also because of the seafood. So, more and more restaurants had been open in Sabah. Most of them are selling

seafood. The restaurants also need to hired workers. Thus, the employment in Services increased.

Table 15
Shift share components of Sabah, 2005-2010.

	National share	Industrial mix	Regional shift	Actual employment growth change
Agricultural, hunting, forestry and fishing	68,956	-32,241	81,785	118,500
Mining and quarrying	480	1,040	880	2,400
Manufacturing	22,758	-15,370	-8,688	-1,300
Construction	16,408	1,118	9,174	26,700
Services	95,682	32,054	17,764	145,500
Country national growth share/ country industrial mix share/ country regional shift	204,284	-13,399	100,915	291,800

Table 15 shows the shift share components of Sabah between year 2010 and 2015. The shift share components include national share, industrial mix, regional shift and actual employment growth change. As shown, Agricultural, hunting, forestry and fishing, Mining and quarrying, Construction and Services sector have positive sign regional shift in Sabah between year 2005 and 2010. These 4 sectors have positive development in Sabah compare to Malaysia economy.

Sabah's national share in all sector indicate positive between year 2005 and year 2010. It also indicate that Services sector have higher contribution in Sabah's economy. The country national growth share indicates that, if Sabah's economy was same to the Malaysia's economy, then the number of jobs in the Malaysia should have increased by 204,284 between year 2005 and 2010. Yet, the data from Table 8 indicates that Sarawak only increased 291,800 jobs during this period.

The entire country industrial mix share component of -13,399 means that Sabah has nearly 13,399 more jobs than it would have if its structure were same to Malaysia. Agricultural,

hunting, forestry and fishing (-32,241) and Manufacturing (-15,370) sectors are developing slower than the Malaysia's average. These two sectors have negative industrial mix. In addition, Mining and quarrying, Construction and Services sectors have positive industrial mix means that Sarawak's economy developing faster than Malaysia average.

As shows in Table 15, all sectors in Sabah have positive regional shift except the Manufacturing sector have negative regional shift between year 2005 and 2010. The sectors with positive regional shift are Agricultural, hunting, forestry and fishing, Mining and quarrying, Construction and Services sectors. Moreover, the sectors with positive regional shift indicates the comparative advantage for the Sabah region.

The actual total employment growth in 5 year from year 2005 to year 2010 is 291,797 in Sabah. Manufacturing sectors have negative growth in Sabah's economy. The Services sector reported as the highest contribution to actual employment growth. The services sector created 145,500 jobs in the Sabah's economy in the last 5 years (2005-2010). In Sabah, Agricultural, hunting, forestry and fishing sector have the second highest contribution. These sector created 118,497 jobs opportunities to Sabah's economy. Moreover, the Manufacturing sector have negative growth, it's reduce 1,300 jobs.

Table 16 illustrated the number of employment in 2010 and 2015, change in employment between year 2010 and 2015 and the percent change of Sabah by divided into 5 sectors. The percent change of total employment in Sabah, 26.63% overall is greater than the Malaysia total employment percent change, 18.22% between year 2010 and 2015. Agricultural, hunting, forestry and fishing, Manufacturing, Construction and Services sectors of Sabah have higher employment percent change compare with Malaysia. These means that these 4 sectors in Sabah have growth faster than Malaysia. Agricultural, hunting, forestry and fishing sector in Sabah employment percent change, 27.15% have greater than Malaysia, 8.61% between year 2010 and 2015. These change is because of the logs exports is increased in these 5 years. It need workers to check the trees conditions whether it is suitable to be cutting down. In this sector also need workers to do the research and development (R&D).

Table 16
Employment data of Sabah by sector, 2010-2015.

	2010	2015	Change in employment	Percent change
Total employment	1,398,600	1,771,100	372,500	26.63%
Agricultural, hunting, forestry and fishing	492,100	625,700	133,600	27.15%
Mining and quarrying	5,000	6,400	1,400	28.00%
Manufacturing	122,000	146,900	24,900	20.41%
Construction	115,600	149,300	33,700	29.15%
Services	663,900	842,800	178,900	26.95%

As shown in Table 16, the Manufacturing sector have increased by 24,900 employment due to the manufacturing development in these related years. Between year 2010 and 2015, Sabah have just started to develop manufacturing sector. Government encourage doing more manufacturing in own countries. The development of manufacturing sector required more workers to do the assembly.

Furthermore, Construction sector increased the percent change due to the increased of the infrastructure by building the solar hybrid system to reduce the use of electricity. Solar hybrid system which using solar panels and a diesel generator backup. Improved the infrastructures by introducing solar hybrid system into the rural areas. These need more workers to spread this information to all rural areas.

Moreover, for the Services sector, employment percent change of Sabah, 26.95% have increased higher than the Malaysia employment percent change, 21.90% between year 2010 and 2015. Tourism sector in one of the services sector, Sabah is one of the state that suitable to travel. But due to the terrorist appear in the Sabah. Some of the tourists fell scare will this things will happen in their body. They will don't want to travel to Sabah. Sabah government should maintain the safe security to the local people and foreign tourists. When this problems decreased, it can attract more foreign and local tourists. To increase the employment in Services sector of Sabah, Sabah Animation Creative Content Centre corporate with the Sabah government training the young generations to learn about how to make creative animation. There have some university that teach

the students do this kind of things. They are using some apps to develop. The foreign investor will continue to invest in Sabah. The continuous of investment come in Sabah, it can have more jobs opportunities. If the country or states become more safe and secure, it can attracting more investment from local and foreign investors.

Table 17 demonstrated the shift share components of Sabah between year 2010 and 2015. The shift share components include national share, industrial mix, regional shift and actual employment growth change. As shown, Agricultural, hunting, forestry and fishing, Manufacturing, Construction and Services sector in Sabah have positive sign regional shift means these four sectors have growth faster than Malaysia in these 4 sectors between year 2010 and 2015.

Table 17
Shift share components of Sabah, 2010-2015.

	National share	Industrial mix	Regional shift	Actual employment growth change
Agricultural, hunting, forestry and fishing	89,665	-47,308	91,243	133,600
Mining and quarrying	911	3215	-2,726	1,400
Manufacturing	22,230	-9,836	12,506	24,900
Construction	21,063	3,195	9,442	33,700
Services	120,969	24,394	33,537	178,900
Country national growth share/ country industrial mix share/ country regional shift	254,838	-26,340	144,002	372,489

Between year 2010 and 2015, the entire country national growth share indicates that, if the Sabah's economy was same to the Malaysia's economy, then the number of jobs in Malaysia should have risen by 254,838. However, the result from Table 10 indicates that Malaysia only grown 372,500 jobs during this period.

Moreover, the entire country industrial mix share of - 26,340 means that Sabah has nearly 26,340 less jobs than it would have if structure were same to Malaysia. Mining and quarrying, Manufacturing, Construction and Services sectors are developing quicker than the Malaysia's average, while the Agricultural, hunting, forestry and fishing sector are growing slower between year 2010 and 2015. The positive industrial mix means that the Sabah's economy increased faster than the Malaysia's average.

As indicated in Table 17, only Mining and quarrying sector have negative regional shift while other sectors including Agricultural, hunting, forestry and fishing, Manufacturing, Construction and Services sectors have positive regional shift. The sectors with positive regional shift indicates the comparative advantage for Sabah. The negative regional shift indicates that the Sabah's economy is losing its share to other state.

The actual total employment change last 5 years (2010 to 2015) is 372,489 in Sabah. All sectors in Sabah have positive increasing in employment. In Sabah, Services sectors always reported as the highest contribution to actual employment growth. The Services sectors have created 178,900 jobs in Sabah's economy between year 2010 and 2015. The second highest contribution as the last period is in Agricultural, hunting, forestry and fishing sectors. This sector have created 133,600 jobs to the Sarawak's economy.

CONCLUSION

From the shift share analysis of Sarawak by sectors shows the Manufacturing sector regional shift have positive value between year 2005 and 2010. These means that Manufacturing sector for Sarawak have positive growth economy is higher than Malaysia. Between year 2005 and 2010, Malaysia government encourage Sarawak forestry sectors increased producing high value added products. For example, logs company can cut the trees by their own and producing some finished goods like wooden tables and chairs.

Between year 2010 and 2015, Sarawak Mining and quarrying, Construction and Services sectors have positive sign in regional shift in shift share analysis. Thus, these 3 sectors economy in Sarawak is much better compare with Malaysia in these 3 sectors. For the Mining and quarrying sector, Sabah transport their natural gas to Bintulu, Sarawak for processing as finished goods. Moreover, the employment increased in Construction sector due to the improvement of infrastructures in Sarawak. One of the improvement of Sarawak infrastructure is building Pan-Borneo Highway that can travel from Sindumin, Sarawak to Tawau, Sabah. It can boost the economy of Sabah and Sarawak by shorten the time that drive from Sarawak to Sabah. Sarawak Services sector have positive value in regional shift between year 2010 and 2015 because government have promoting the travel places of Sarawak to local and foreign tourists. For example, Niah National Park and Gunung Mulu National Park are the places that introduce to tourists. The introduction of travel places can attract tourists come and visit Sarawak. Thus the services sector would increase by increased the numbers of hotels. However, Manufacturing sectors in Sarawak between year 2010 and 2015 have negative regional shift value due to these sector are more depending of high-tech machine. So the Manufacturing sector less using manpower.

For the Sabah shift share analysis for 2005-2010, all of the sector have positive regional shift except Manufacturing sector have negative value. The sector with positive regional shift are Agricultural, hunting, forestry and fishing, Mining and quarrying, Construction and Services sectors. Between year 2005 and 2010, the employment change for Agricultural, hunting, forestry and fishing sector in Sabah is growth faster than Malaysia due to the Sabah have many fresh seafood, increased the number of people being fisherman. While the Mining and quarrying sector in Sabah also develop faster than Malaysia. In Sabah, they still have oil and gas. They need more workers work in the mining and quarrying sector. They not only have natural gas, they also have copper, coal, gold, iron and others. Other than that, Construction sector of Sabah also develop faster than Malaysia between year 2005 and 2010 because Sabah have development in housing and resort. Sabah also have

development to build the roads to increase the infrastructures for more development. Malaysia government also promoting the Sabah travel places to local and foreign tourists. For example, Kinabalu Park and Mount Kinabalu have been introduce to the tourists. Government have put some advertisement in the airport television to attract more tourists. Sabah have some famous seafood like tiger prawn and seaweed also introduce to tourists. The increased of tourists would increase the number of hotels and seafood restaurants. It need more workers to be work in the hotels and restaurants industry.

Between year 2010 and 2015, Agricultural, hunting, forestry and fishing, Manufacturing, Construction and Services sector in Sabah have positive sign of regional shift. The plantation of palm oil in Sabah have been increased due to the high demand of palm oil. The export of logs is increased in these 5 years, it required more workers to work in forestry industry. These sector need worker to check the tress conditions whether it is suitable to be cutting down, etc. Therefore, Agricultural, hunting, forestry and fishing sector in Sabah have increased in employment. Between year 2010 and 2015, manufacturing sector in Sabah have just started to develop. Thus, Sabah required more worker to develop and employment in Sabah Manufacturing sector have increased.

Moreover, Sabah Construction sector increased the employment due to the increased of the infrastructure by building up between year 2010 and 2015. The rise of tourists to Sabah have increased the employment in Services sector. However, due to the terrorist appear in the Sabah have causes the tourists decreased. Therefore, Malaysia government should maintain the safe security of Sabah.

Recommendations

Expansion in high tech manufacturing supply chain cluster and high tech industries

In Sarawak, solar energy applications were been heavily invested by China investors. For example, Sarawak Energy Berhad (Sarawak Energy) as one of the energy development company and a vertically integrated electricity utility is comprising about 4500 employees (Sarawak Energy, 2013).

Therefore in order to continue develop Sarawak into an developed state meanwhile provide job opportunities for local citizens, solar panel investment from China is encouraged to be focused in development plan.

In respective to economic development in Sabah, the education and training services are seems as a good opportunity to open into a new market as well as develop human talent in Sabah. For example, the Sabah Animation & Creative Content Centre (SAC3). In related to that, we are confidence to believe in that these industries able to provide job opportunities (for example, apps development) for citizens even they may not meet to have a high education level and qualification. Therefore, we strongly suggest state government and related parties to have focus on the industry by giving chance of development and improvement in sufficient budget allocation.

Expansion in tourism services

The services sector in Sarawak was nicely developed, however that is still space for improvement. Therefore, hereby encouraged to have more focus on higher value added on goods and services in Sarawak such as medical tourism. As been analysed in Oxford Business Group (2015), the international health travel sector in Malaysia continues to grant a worthy income to nation. The state government of Sarawak should well aware of this opportunity, and have more action on work together with hospitals and hotels to grant a better services for health tourists and their families. Besides that, medical tourism can also be promoted with the Mulu Caves UNESCO (United Nations Education, Scientific and Cultural Organization) sites, national park and museum in order to gain a higher revenue when more and more family members of patient travel to Sarawak while having their medical services in local hospitals. Similar to in Sarawak, medical tourism is suggested to be promoted with Mount Kinabalu UNESCO sites, national park, Marine Park and more. As medical tourism is a trend nowadays, Sabah state government is encouraging to have more effort on this.

Sarawak has introduced initiatives to develop the tourism sector. In related to the service sector, it had suggested

that Sarawak to promote about business event. In Sarawak, the Sarawak Convention Bureau (SCB) is the centre connecting all the association in organization of business events. In related to that, the Sarawak state and federal government should have more effort in well planning and achievement in development of the business event facilities with modern technology and corporate culture. In compliance to that, action to upgrade and improve tourism products such as hotels and Entertainment Park are important too. Thus increase the reputation of business tourism local and internationally and been a place to attract more tourism opportunity.

In aspect to tourism, tourists can be treat with a regional experiential tourism. The state government and related parties are encouraged to able to provide a satisfying, fun and interesting experiential learning for tourists by combining modern technology and local culture. Basically, they will need to improve and upgrade the action of preservation and protection toward the cultural heritage, such as the long house, Kuching's 'Kampung Budaya' and museum. Besides that, the related heritage places can have more advancement in technological equipment as so to provide a special experience for tourists in their journey. Globally, the trend of experiential tourism has grown rapidly especially in among western people. This is an opportunity to boost the economy in tourism sector into a higher level of development. In addition, the organizational of event festival is a good choice to be implemented in perfect the tourism sector. An event festival usually will attract more tourists in choose to travel to the place.

Exploration towards heavy industries such as oil and gas / mining and quarrying

As in result obtained, the mining and quarrying sector in Sarawak continues to have high employment competitive advantage during year 2005 to year 2015. In complimentary to that, the state government is encouraged to explore upstream and downstream oil and gas operations.

In findings, Sabah had its employment competitive advantage shift from manufacturing sector to mining and quarrying sector from year 2005 to year 2015. However before

that, the mining and quarrying activity seems to be an important sector in contributing towards the Sabah GDP. Despite to depend on private company, the state government is encouraged to explore the high value mining activity such as oil and gold as such activity able to generate high income and thus provides employment opportunities.

Telecommunication improvement

In analysis, there are still some rural area deep inside areas of Sarawak and Sabah were still having their infrastructure facilities far fall behind as compared to other area. To promote an area's economic development, infrastructure perfection is always one of the factor contribution. Hereby, the state government of Sabah is suggested to have consideration to have their facilities upgraded. For example, a greater coverage area with a speed up Wi-Fi connectivity and broadband.

Basic infrastructure improvement

In this point, we were discussed about the solar energy implementation in Sabah. According to information, the solar hybrid system was only been introduced into rural areas in Sabah by year 2015. As compared to in Sarawak which been heavily invested by China investors, solar system in Sabah was still in a space of development. Therefore, the state government is suggested to have more allocation in solar system development.

Limitation of Study

As the data obtained in the study were restrained due to limited resources, it is believing that there are many factors that affect employment in a region such as household and population, foreign direct investment as well as personal factors and expectation. In compliment to limited resources of data, there were only year 2005 to 2015 been achieved and analysed in the study. Thus, it was encouraged to involve longer period data of estimation in future study. Other than that, that was limitation discovered in this research regarding the usage of shift share analysis. As in this research, the analysis was only focused on industry- based employment and to analyse towards the sectoral employment competitive advantages.

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