

DSEC 25th Anniversary

Macau's University Research Project Competition

“Develop Macau as a Sustainable Tourism Destination in terms of Hotel industry”

A proposal submitted to the DSEC for the Macau's university research project competition

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Abstract:

This paper aims to find out the impacts and changes resulting from the rapid growth in the tourism industry of Macau, looking at the three aspects in the goal of achieving sustainable tourism development: economical, social and environmental, and also to investigate the hotel industry's role as an important element of Macau's tourism industry and its impact on the local community. Both qualitative and quantitative research methodology will be used to complement together and clearly state the findings.



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Chapter 1 - Introduction

In the past few years, Macau has become an international tourism destination. The liberation of gaming license had brought about large foreign investments and facilitates infrastructure. However, it is vital for a tourism destination to maintain sustainable growth in long run. This can be ensured when these three aspects are with positive changes: ***economical, social and environmental***. In other words, Macau should adjust itself in various fields so as to remain its competitiveness as a tourism destination and attract more tourists. It is also stated by Ritchie & Crouch¹ that whenever to enhance the competitiveness of a destination, it should look after on the resource and take concern on the social and environmental aspect as well.

*“What makes a tourism destination truly competitive is its ability to increase **tourism expenditure**, to increasingly attract visitors while providing them with satisfying, memorable experiences, and to do so in a profitable way, while enhancing the **well-being of destination residents** and preserving the **natural capital** of the destination for future generations”*

Ritchie & Crouch (2003)²

It is also stated by Edmund Ho, the Chief Executive of the Macau SAR, when he was publishing 2007 policy in November 2006 that:

*“The government’s commitment to increase the local Quality of Life; to ensure the sustainability of its development model; and to ensure that everyone enjoys the benefits of economic growth. “ by Edmund Ho
(chief Executive of the Macau SAR)
Macau quality of life report 1 (2007)³*

Therefore, developing a sustainable model of Macau should help to increase the quality of life and brings financial profit as well as to maintain environmental stability. We are looking for the facts from DSEC’s statistic and other secondary data, in order to identify whether any factors of sustainable tourism (ST) is encumbering Macau’s tourism sustainability, and discover how Hotel industry affect on the sustainable tourism of Macau.

This study is important because the more tourist arrival, the more consequences will be occurring in Macau. The sustainable tourism planning should satisfy Macau residents, enterprise and tourist. This will affect resident’s quality of life, the standard of tourism product and reputation of Macau tourism. Data analysis is constructed in part 3 & 4 and analysis with recommendation will be in part 6.

¹ Ritchie and Crouch was famous in tourism aspects and developed conceptual model of destination competitiveness.

² Ritchie, J. R. B., & Crouch, G. I. (2003), *The Competitive Destination: A Sustainable Tourism Perspective*. Wallingford: CABI Publishing

³ *Macau quality of life report*, Macau inter-university institute, Vol. 1

Chapter 2 - Background

2.1 Tourism industry overview

Macau, a 29.2 km² (Macau Statistics and Census Service, 2007) former Portuguese colony situated at Southern China, at the edge of Pearl Delta River, is the only legal place in China that allows gaming industry developed. We have been experiencing a rapid growth in Gross Domestic Products. Since the liberation of the gaming license in 2002, Macau's GDP has increased from MOP 12,219 million in 1st quarter of 2002 to MOP 43,462.2 million in the 1st quarter of 2008⁴ (Macau Statistics and Census Service, 2008). Macau has opened its door to foreign investors, and the tourism industry is becoming the most important industry, which mainly focuses on hotel, gaming, events and heritage market. It brings a significant increase in the number of tourists visiting Macau, from 11,530,841 in 2002 to 22,933,185 in 2008 (Macau Statistics and Census Service, 2008).⁵ Additionally, the launch of the Free Individual Travel (FIT) scheme in 2003 had allowed Chinese citizens in major cities of China to travel to Macau. It is true that Macau government's aggressive gaming developing strategies has brought positive changes to GDP and employment rate, however, several problems or drawbacks may arise from this massive economy growth. These problems are defined in different aspects, for example, increase in cost of living and residual prices, indicated by continuous increasing in inflation rate since 2004 and even reached 9.49% in Feb 2008 (Macau Statistics and Census Service, 2008).⁶ Macau is also facing a problem of singularized industry, which is focusing on gaming, and there is a serious shortage of labor. Other social issues include an increase number of crimes and overcrowding (table 3) (Li S. & Tsui Y, 2009)⁷. In long run, it is necessary for Macau to develop a thoughtful plan in order to remain its competitiveness since the number of direct competitors such as Singapore is growing rapidly.

2.2 Hotel industry overview

In the past decades, Macau's economy boomed because of the liberalization of the gaming license in 2002. Many international companies, especially chain hotels, established businesses in Macau including Wynn Resort, Venetian, MGM Grand and Melco Entertainment Group etc. Besides the foreign investments, some domestic hotels start reconstructing and developing the exiting business. Due to this reason, both quality and quantity of hotel rooms are increased in order to differentiate itself in this keen competition. Macau tourism and hospitality industry became the leading industry which brings benefits to this city. As the number of tourist arrivals are increasing nowadays, the sector of "accommodation" become critical. The development of lodging industry would be one of the important elements leading this city to success.

According to the sources from Macau SAR government statistic, DSEC (Macau Statistics and Census Service) reported that the number of hotel establishments keep increasing. However, with such a big number of tourist arrivals, the average length of stay of hotel guests in Macau in 2008 is only 1.44 night in

⁴ Macau Statistic and Census Service (2008). *Gross Domestic Product (By Production Approach)—Annual*

⁵ Macau Statistic and Census Service (2008). *Tourism statistics*

⁶ Macau Statistic and Census Service (2008). *Inflation rate (year on year change)*

⁷ Li S. and Tsui Y. (2009), *Casino booms and local politics: The city of Macao*.

average of 2008(Macau Statistics and Census Service,2009). Three major arrival sources are Mainland China, Hong Kong and Taiwan (MGTO- presentation on 2009 promotion),⁸

There are more than 80 hotel establishments in Macau and the comprehensive hotel complex would be good advantages for the lodging development. The new trend would be combining the accommodation, dinning, shopping and recreation facilities together to enhance the hotel attractiveness. Therefore, bringing an unforgettable staying experience to the guests would be the core objectives. The physical facilities and the performance of service providers created the value to the guests and it determines their perceptions. Both are the important elements to decide whether the hotels can have return business and generate more revenue or not.

The hotel occupancy rate shows the percentage of occupied rooms quarterly. This is an indicator of the business of hotels and can help to estimate how much profit or business the hotels are making. In 2003, there is a significant decrease in occupancy because of SARS. After that, the overall occupancy remains and fluctuates between 70% and 80%.

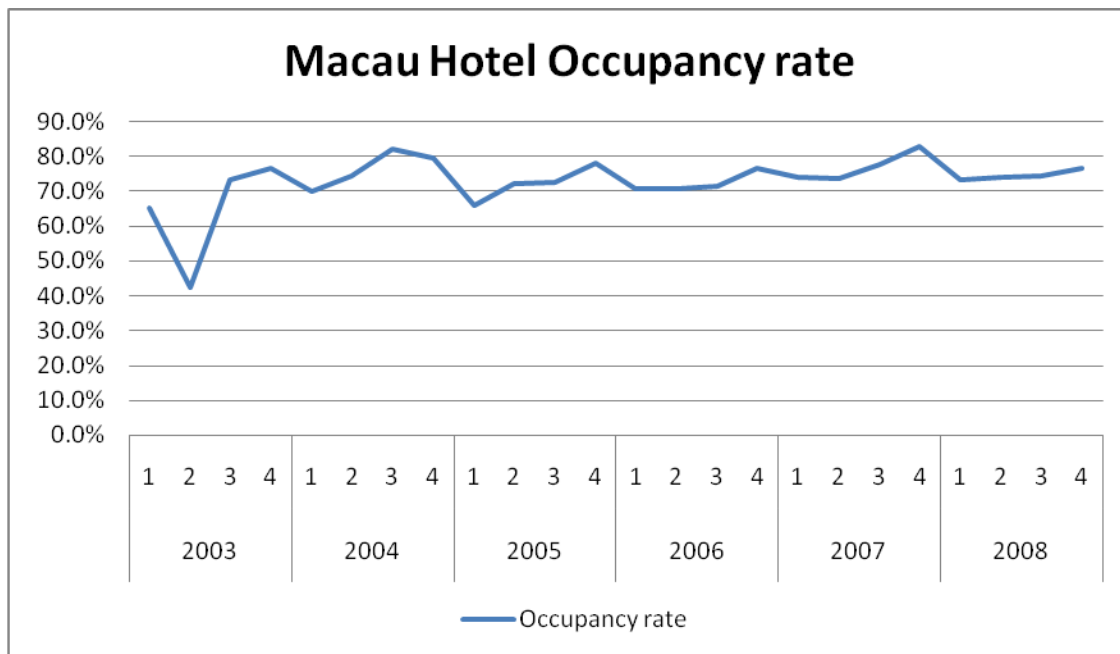


Figure 2.2.1

In addition, except SARS period in 2003, the occupancy rate of 3 star hotels remains the highest in average; followed by 4 stars hotels. Furthermore, there is an increase in the occupancy rate of 4 star hotels and even exceeded 3 star hotels from 2006 onwards. There is a fast development in 4 star hotels. 2 stars and 3 stars hotels occupancy remain a stable progression pace.

⁸ Macau Government Tourist Office – *Presentation on 2009 MGTO promotion*

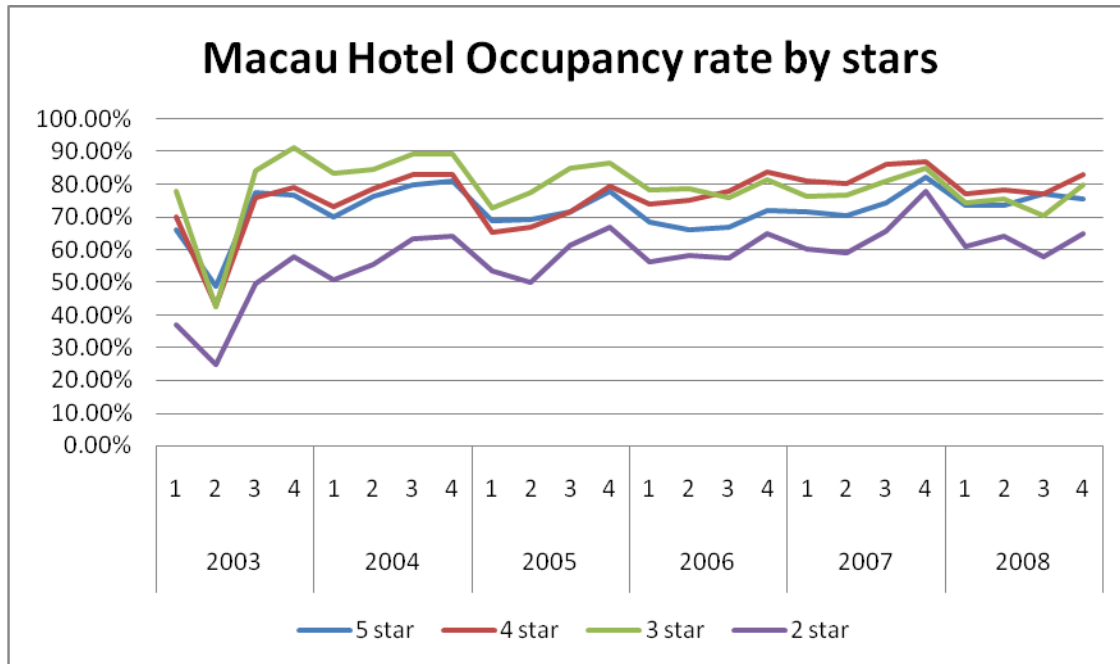


Figure 2.2.2

Due to the liberation of gaming license, more foreign investors and more hotels are built. Therefore, the **total number of hotel rooms**⁹ has increased from below 10,000 in 2000 to above 17,000 (17490 rooms) in 2008. We will use this statistic as based to illustrate our research model.

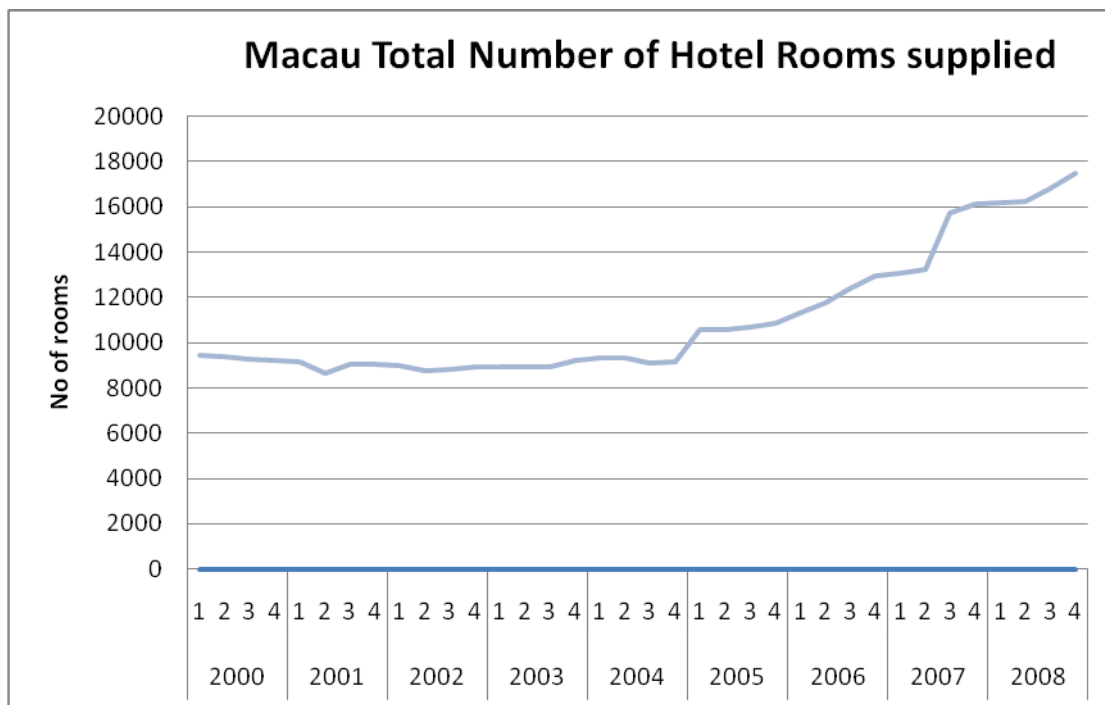


Figure 2.2.3

⁹ Macau Statistic and Census Service (2003-2008). *Tourism statistics*

Chapter 3: Descriptive Information: Factors of sustainable tourism

In this part, we will investigate into details about the three factors that contributing to sustainable tourism. The three factors are impacts on economical, environmental and social.

3.1 Economical Sector

Economic in Macau has been facing a rapid growth. We will discuss about the trend of economic growth in Macau and what factors contribute most on sustaining the tourism development in Macau. Statistical information, the median wages, CPI, GDP, etc. will be used in the following section.

The median wage of people working in hotel industry

For the opening of gaming industry in 2002, the opening of hotels and casinos demand a lot of labor force. This makes the median wages of people working in hotels and restaurant to be higher by year. The amount increased from MOP3981.00 in the 1st quarter of 2000 to MOP 6500.00 in the 4th quarter of 2008 (Macau Statistic and Census Service, 2000-2008)¹⁰. It has increased 63.28% in the industry in 8 years time. From Figure 3.1.1, we can see that the trend line is increasing and we can predict that the trend will go on due to the demand of people working in hotel is still high.

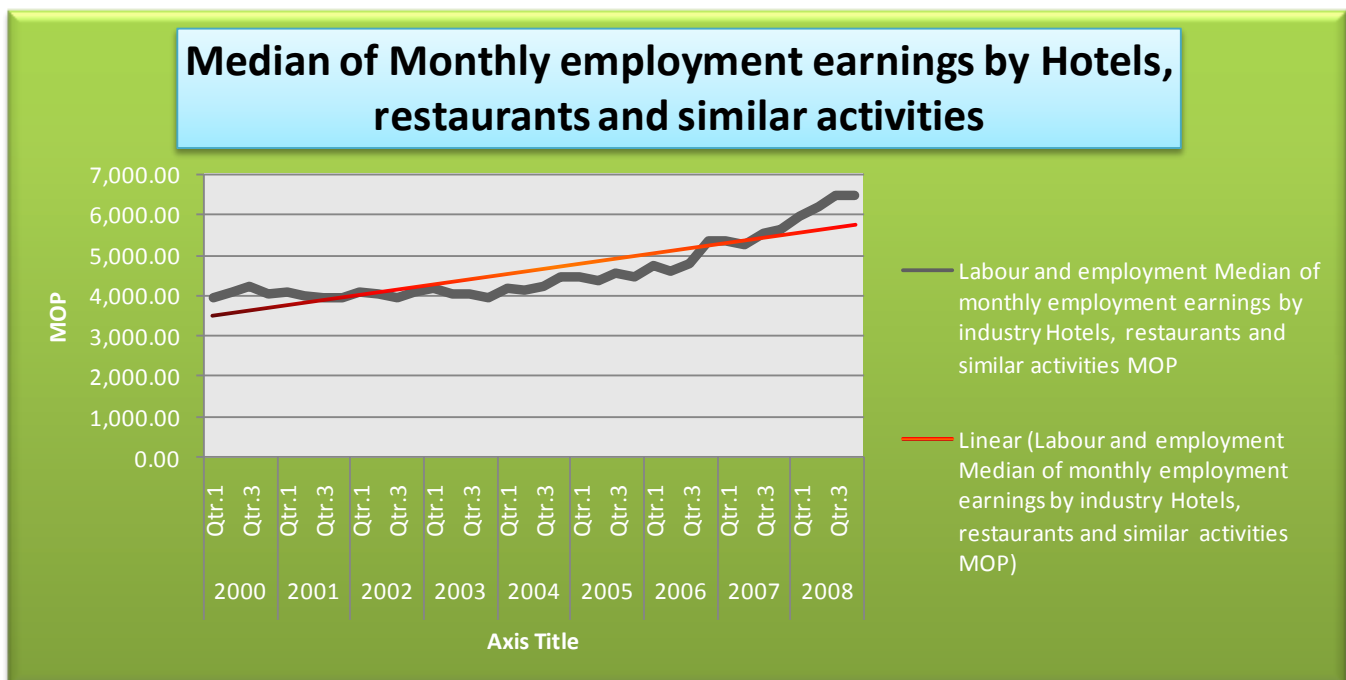


Figure 3.1.1

¹⁰ Macau Statistic and Census Service (2000-2008), *Labor and Employment*

Consumer Price Index (CPI)

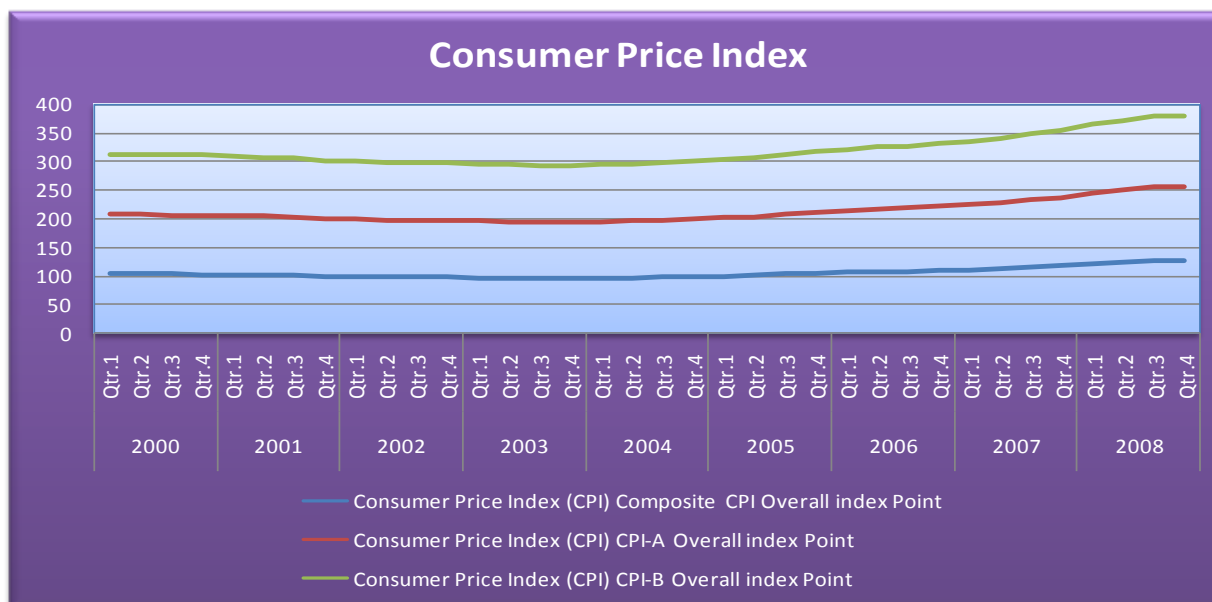


Figure 3.1.2

The Overall CPI in 2008 has reached 124.32. The CPI-A represents the households with lower spending (MOP 3,000 to MOP 9,999 per month in 2008) while the CPI-B represents the households with higher spending (MOP 10,000 to MOP 19,999 per month) in Dec 2008 (Macau Statistic and Census Service, 2008)¹¹. We can see from Figure 3.1.2, the two index are in an increasing trend year by year since 2000. We can conclude that both low and high spending households tend to spend more on commodities. This is affected by the median monthly wage of hotel, restaurant and other activities. In figure 3.1.3, the median of labor earnings, has reached the highest in 2008 to MOP 8,500. This has reflected the consumption pattern of people in Macau is changing in these years.

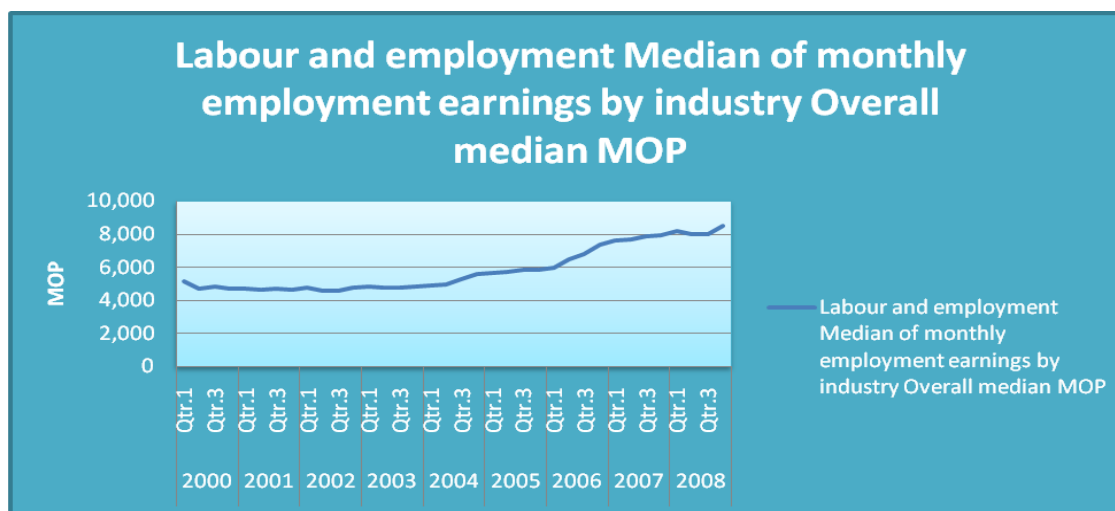


Figure 3.1.3

¹¹ Macau Statistic and Census Service (2008), *Consumer Price Index*

Inflation Rate

The economy of Macau was in a deflation status before 2004. After the 2nd quarter of 2004, Sands Macao began to take part in Macao gaming market, the products in Macao tended to be more and more expensive. As we can see from Figure 3.1.4, the inflation of Macao is in an upward trend and it has maintained a positive number since 2nd quarter in 2004. The inflation rate in the 4th quarter 2008 has reached 7.48 (Macau Statistic and Census Service, 2000-2008)¹². The inflation rate is also come from the CPI. It is the same period variance of the CPI in percentage. However, due to the income of people are increasing faster than the inflation rate, we can say that the CPI is currently not affected as people are still eager to consume.

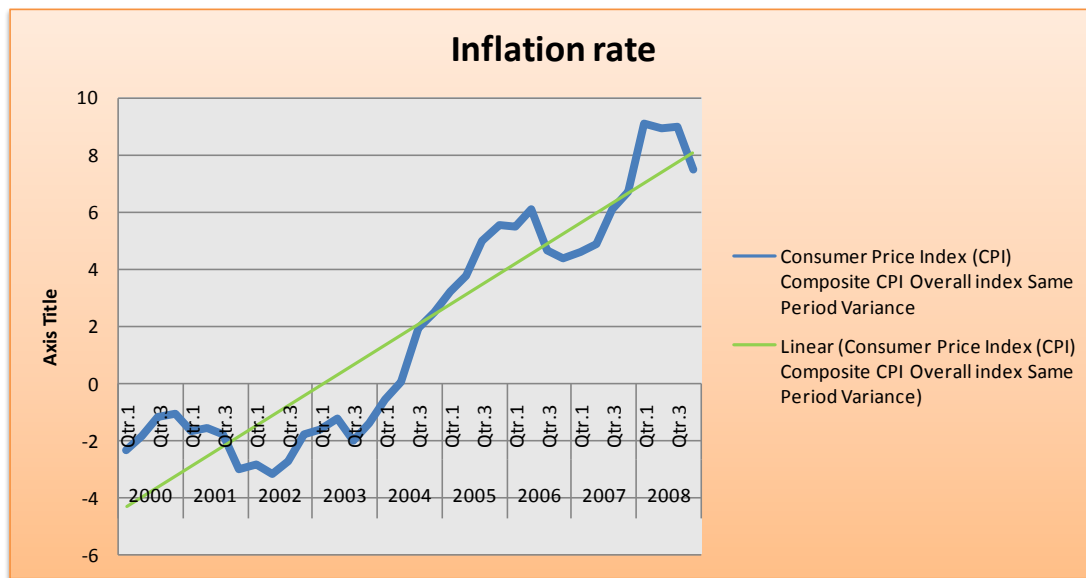


Figure 3.1.4

Gross Domestic Product (GDP)

The GDP of Macau has been stably increasing year by year after 2000. The GDP has even reached USD 39,036 in 2008 (Macau Statistic and Census Service, 2000- 2008)¹³. The difference of GDP between 2006 and 2005 was MOP 4,294 while the difference between 2007 and 2006 was MOP 6,911. This is a great figure that we can see the GDP of Macau has got a great improvement from 2005 to 2007.

*“Thanks in large part to surging gaming revenues and continuous resort development, Macau has become Asia's most wealthy territory,”*¹⁴ (Macau now Asia's richest region, 2008)

We can see Macau has become a competitive region in terms of GDP. However, these figures are really dependant on the gaming revenue and gaming revenue has occupied a great portion on it.

¹² Macau Statistic and Census Service (2000-2008), *Inflation rate*

¹³ Macau Statistic and Census Service (2000- 2008), *GDP*

¹⁴ Macau now Asia's richest region, reports say (May 2008). *International Gaming & Wagering*, retrieved June 23, 2009, from Hospitality & Tourism Complete database.

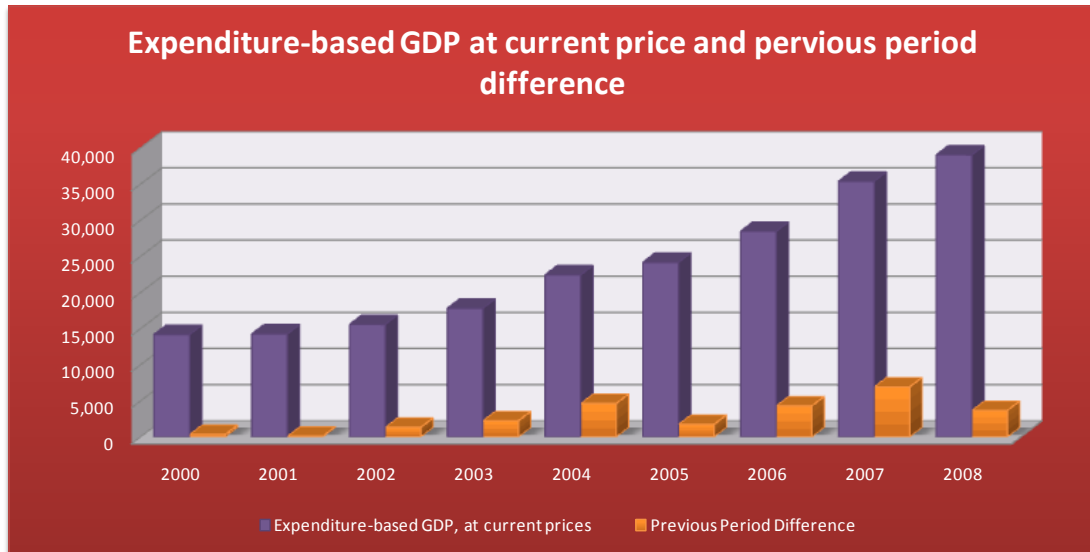


Figure 3.1.5

3.2 Environmental Sector

Environment is one of the components in achieving sustainability. In this section, we are going to look at the environmental impacts results from Macau's rapid tourism development in the recent years, using statistics to prove that Macau is now facing certain environmental problems.

Electricity consumption

First of all, the electricity consumption of Macau was increasing significantly. By comparing the annual consumption of 2000 and 2008, the consumption increased more than double, from 1572.8 million kWh to 3311.7 million kWh (Macau Statistic and Census Service, 2000-2008)¹⁵. From Figure 3.2.1, the data shows that there is an increasing trend for electricity consumption in from 2000 to 2008. On the other hand, the fluctuations shown in each year indicate the high electricity consuming seasons spring and summer (quarters 3&4). Furthermore, in Figure 3.2.2, it shows that “Commerce, restaurants and hotels” and “Domestic consumption” are the main sectors of electricity consumption in 2007 (Macau Office for the Development of the Energy Sector, 2007)¹⁶. The sector “commerce, restaurants and hotels” even had the highest electricity consumption percentage in Macau of 21.5%. Moreover, it is true that Macau's electricity supplier, CEM, has implemented several strategies such as the import of natural gases to reduce the impacts on environment arisen from the fast growing hotel industry, it is believed there are still side effects on the environment.

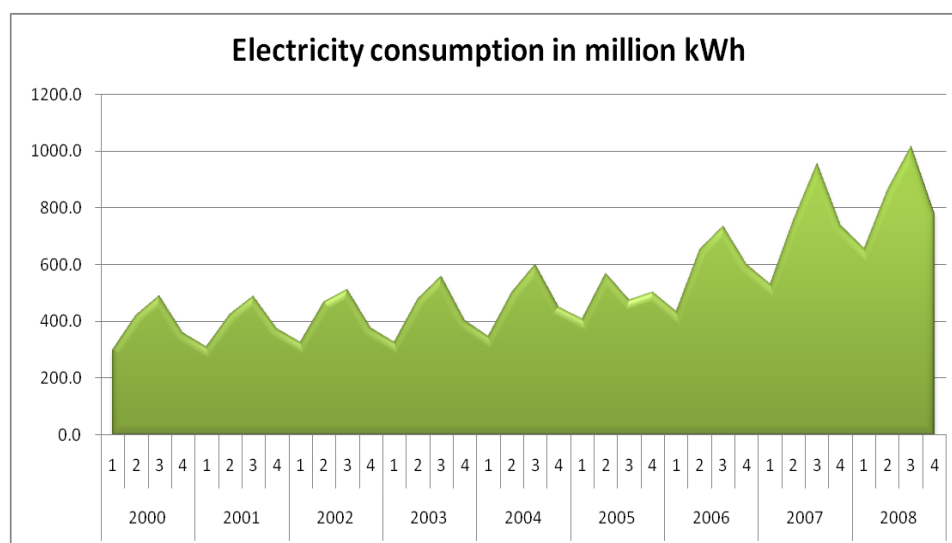


Figure 3.2.1

¹⁵ Macau Statistic and Census Service (2000-2008). *Electricity Consumption*.

¹⁶ Macau Office for the Development of the Energy Sector (2007). *Final Energy Consumption by Sector*.

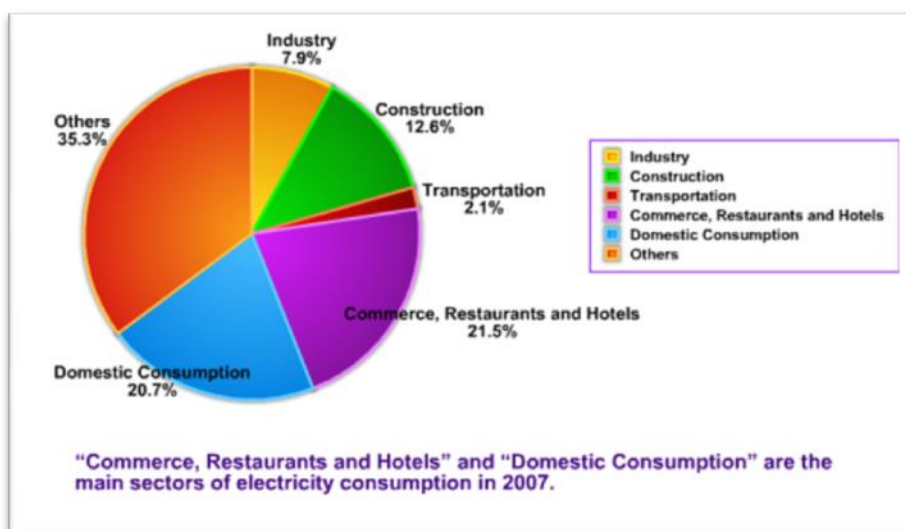


Figure 3.2.2

Air Quality

Air quality index is an indicator of Macau's air quality. The following Figure 3.2.3 shows the air quality index from 2000 to 2008 (Macao Meteorological and Geophysical Bureau, 2000-2008)¹⁷. There is a slight increase in the air quality index since 2000, and it keeps in moderate range with the roadside receives the highest index. The reason for this high index of roadside is believed to be the increasing vehicles over the past few years. As shown in Figure 3.2.4, the number of licensed vehicles increased steadily and reaches the highest of 182765 in 2008 (Macao Statistic and Census Service, 2000-2008)¹⁸. This increase is believed to be the side effects of the fast growing tourism industry and the necessary transportations associated, and thus, this is going to further pollute air in Macau.

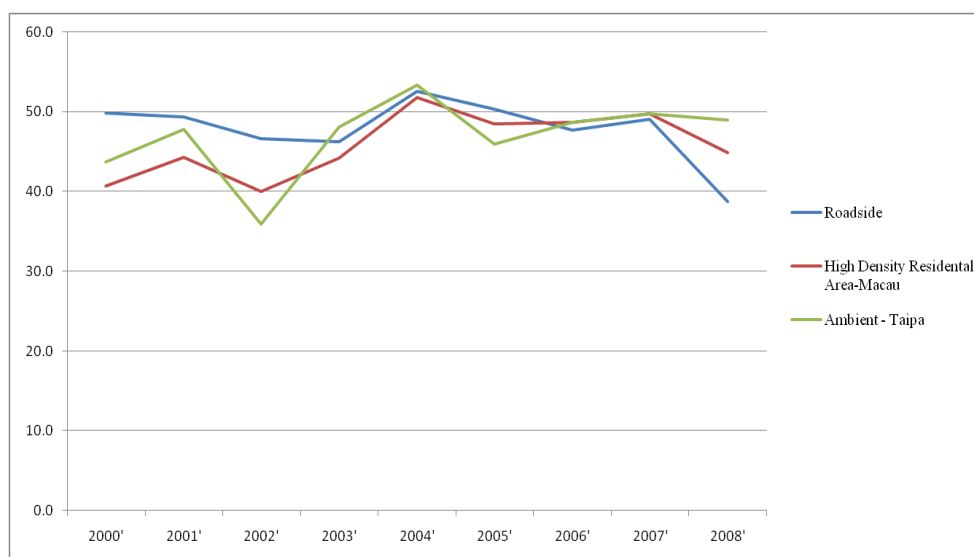


Figure 3.2.3

¹⁷ Macao Meteorological and Geophysical Bureau (2000-2008). *Air quality index historical data*

¹⁸ Macao Statistics and Census Service (2000-2008). *Licensed vehicles*

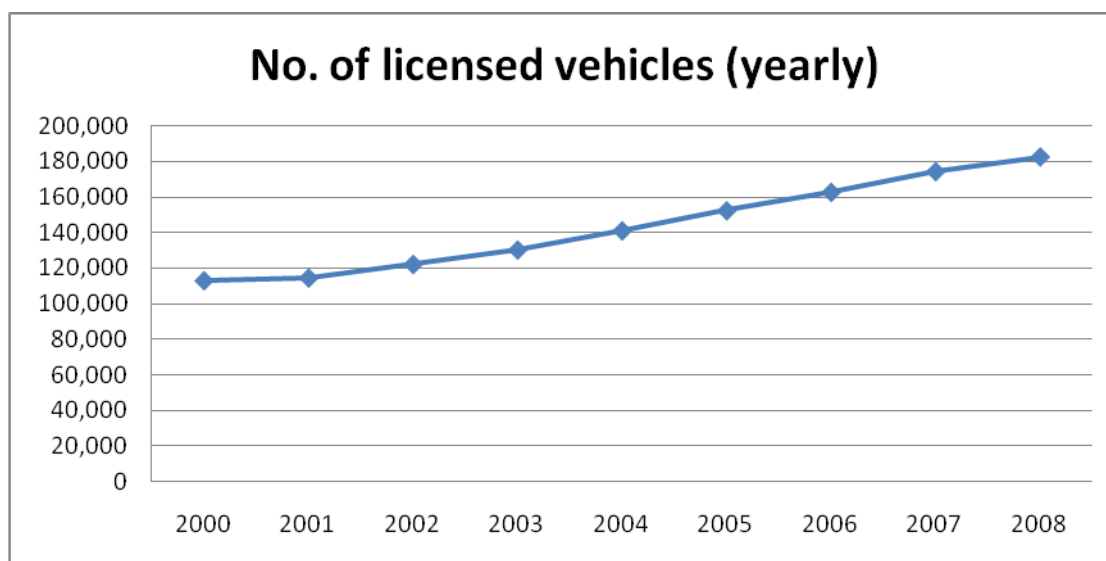


Figure 3.2.4

Waste

Statistics shows that Macau's total waste includes liquid and solid wastes are increasing. Table 3.2.5 shows the total solid waste of Macau from 2002 to 2008 (Macau Statistic and Census Service, 2002-2008)¹⁹:

Year	Domestic waste (tonnes)	Commercial & industrial waste (tonnes)	Construction waste (m ³)
2002	146642	46308	244930
2003	154067	46019	349090
2004	154527	51508	583380
2005	162131	55456	1294863
2006	167743	55915	1971003
2007	174452	68786	3118253
2008	179464	75263	1939390

Table 3.2.5

From the above figures, it is obvious that construction waste observe a significant increase throughout these 7 years. This is mainly due to the large number of hotels and casino constructions in Macau and the construction wastes reaches as high as 3,118,253 m³ in 2007. This is causing severe damage to the environment and also gives pressure to Macau's waste handling capacity.

¹⁹ Macau Statistics and Census Service (2002-2008). *Environmental Statistics*.

On the other hand, as shown in Table 3.2.6, the liquid waste also encounters an increase since the opening of new hotels and casinos (Macau Statistic and Census Service, 2002-2008)²⁰. This causes water pollution to the nearby sea and to the environment.

Year	Liquid waste (m ³ per day)
2002	146030
2003	133622
2004	151039
2005	152388
2006	151833
2007	167624
2008	124228

Table 3.2.6

In conclusion, Macau's rapid development of tourism has caused lots of sideeffects to the environment. However, it is a must for Macau to improve in this environment aspect if one wants to achieve sustainable tourism development. There are various measures that the government and hotels can take in order to minimize the impact on environment and to balance the economical benefits with the side effects.

²⁰ Macau Statistics and Census Service (2002-2008). *Environmental Statistics*.

3.3 Social Sector

The third factor it needs to be discussed is the social sector. The rapid growth of Macau tourism industry causes a lot of consequences to the society. It creates difficulties to update government policy and builds up many complaints from Macau's residents.

It is indicated that locals are mostly dissatisfied by the transportation in Macau, which the statistic is published by the Macau quality of life report 1 (2007) issued by IIUM ²¹. It is the only factor that below average. This issue leads to a heavy discussion in the society particularly about the insufficient public transport (taxis & buses), the increased number of private cars, and the negative effects on congestion and pollution (Macau quality of life report 1, 2007) which we have found the air quality index in previous part.

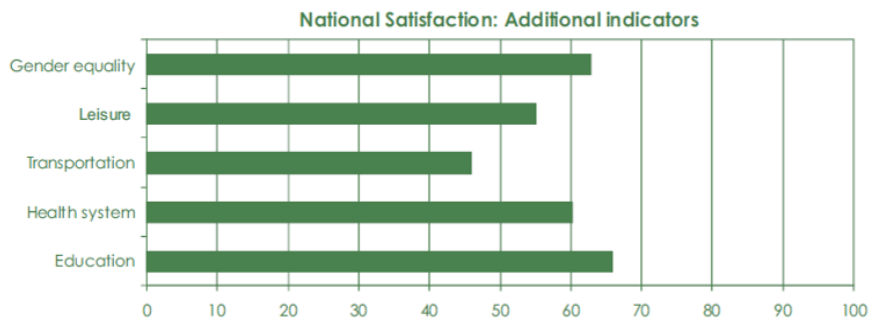


Figure 6 - Additional national satisfaction indicators

Figure 3.3.1

According to the study of Li S. and Tsui Y²² in 2009 about the side effects of Macau's gaming industry development, various possible social impacts are showed by statistics. These include: there is an increase in the number of crimes, an increase in school dropout which indicates that young students leave school early and work. An increase in respiratory mortality means more people died because of air pollution, etc.

Macau Statistics and Census Service also conducted a visitor expenditure survey quarterly every year. Visitors are interviewed about their comment on Macau's tourism sectors, that is, their satisfaction rate ²³ on Macau's travel agencies, hotels, restaurants, shops, public transportations and gaming establishments. It is proved that the satisfaction rate on public transportation keeps decreasing. The percentage of satisfy have a downward trend since the fast development of casino and hotels. The transportation problem raised the negative feeling of tourists as well as local residents thereby.

²¹ *Macau quality of life report*, Macau inter-university institute, Vol. 1

²² Casino booms and local politics: The city of Macao. *Cities*

²³ Macau Statistic and Census Service (2003-2008) – *Tourism statistics*

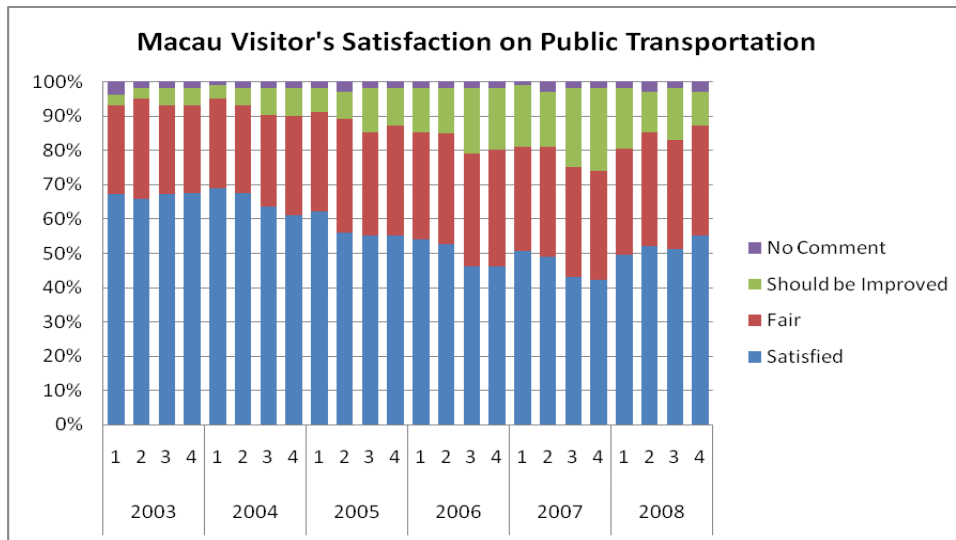


Figure 3.3.2

The labor market

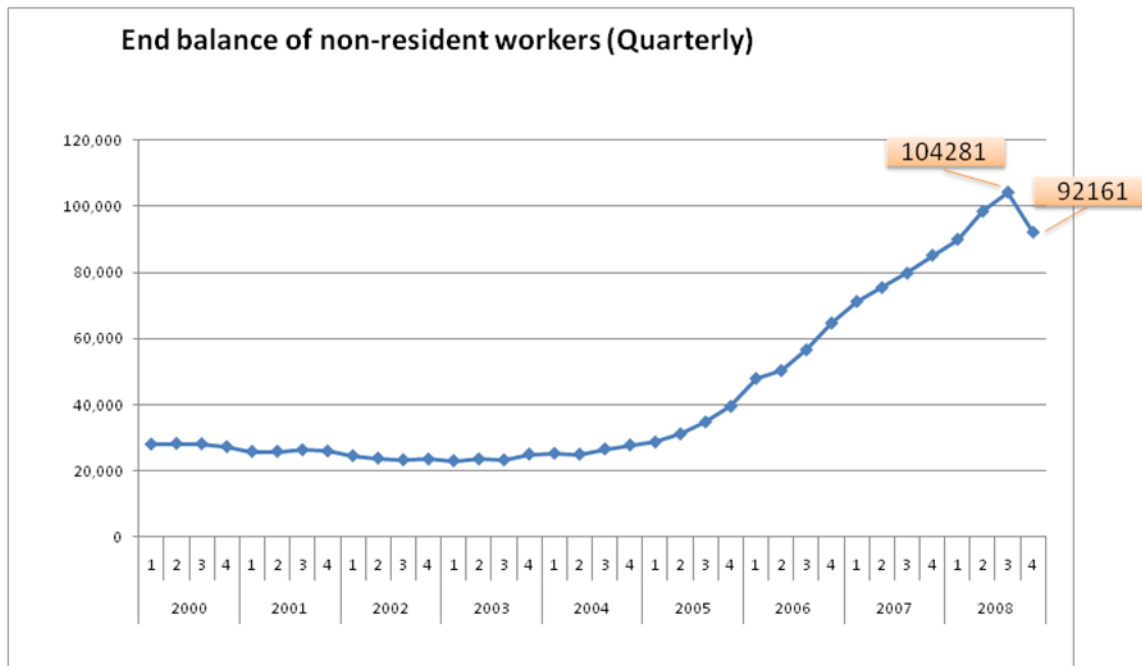


Figure 3.3.3

One of the most visible impacts to society is the labor market. After the liberalization of gaming licenses in 2003, there are lots of large and international casinos and hotels established in Macau. In order to satisfy the huge demand of worker, Macau started to import a large quantity of non-resident worker from 2003. Base on the statistic²⁴ from 2000 to 2008, the number of Macau non-resident worker has been increased in these few years and there is a dramatic increase from 2004, when the new hotels and casinos being opened and constructed. It increased around from 27736 in 2004 to 92161 in 2008. Besides, there are more job

²⁴ Macau Statistic and Census Service (2000-2008), *End balance of non-resident workers*

opportunities in this tourism and hospitality field. The unemployment rate is very high after the handover in 1999 but drops immediately from 2004 due more job opportunities for workers. The figure shows that it was 6.7% at the 1st quarter of 2000 and it decreases in a half to 3% (what is the actual figure) in 2008.

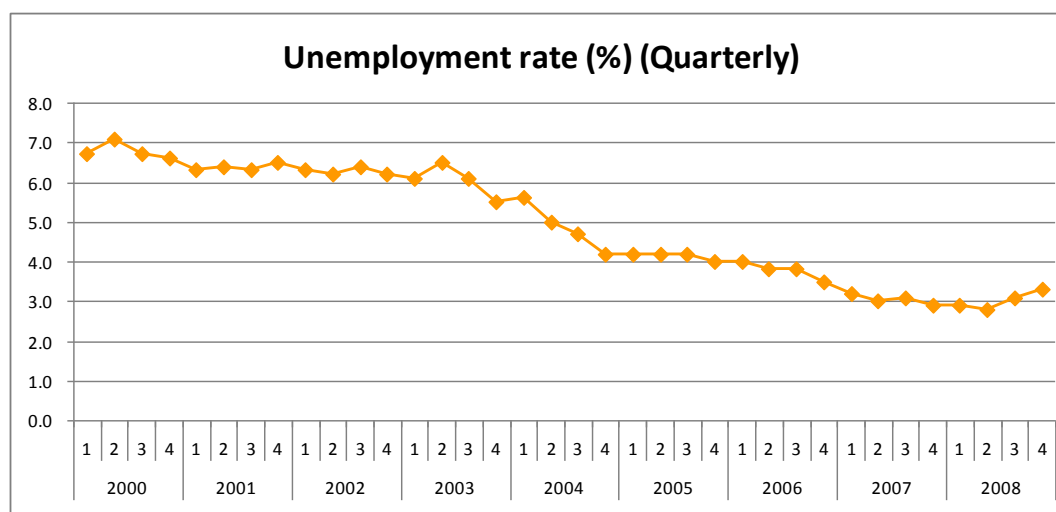


Figure 3.3.4

At this point, there are conflicts between locals and non-residents workers. For local's point of view, the drop of unemployment rate benefits them a lot and increases their purchasing power. However, the job nature and their duties are not counted into this circumstance. Quarrels start to occur and put on demonstration, locals are discontent with too many foreign workers work in Macau. There is no doubt that if a tourism destination develops to attract more tourists, especially in a shortage of labor. Importing expatriate employees is a solution for employers, but the outcome is hiring non-residents with lower salary which cause conflict between locals.

Crime rate:

The increase number of tourist arrival will also lead to increase number of crime rate. From the figure below, it shows that the number of crime cases increase around 30% from 2000 to 2008. The number of crime cases increase especially from 2006 to 2007 which is 19% on based year. We cannot admit that the increase number of crime case is affected by more tourists' arrival. However, the trend is that it starts to increase when the 6 gaming operators start their business from 2004.

Year	Yearly	% increase
2000	8,925	-
2001	8,905	0%
2002	9,088	2%
2003	9,920	9%
2004	9,786	-1%
2005	10,538	8%
2006	10,855	3%
2007	12,921	19%
2008	13,864	7%

Table3.3.1

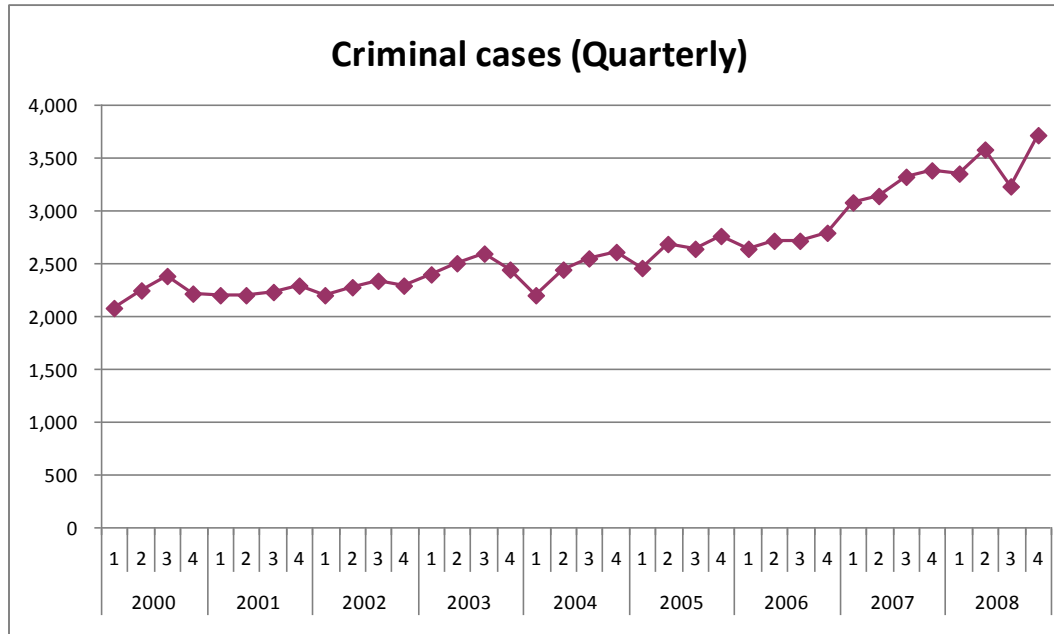


Figure 3.3.5

Educational problem

The number of school dropouts also increased a lot since 2003. The figure below shows the number of school dropouts for the purpose of work. Many students quit their studies and move to work in casino especially. The high wages attract them and work as dealers, the number of cases increase almost 4 times comparing between 2002 and 2005. The number still continues keep in high rate and the problem of school dropout is a loss to the students and their family.

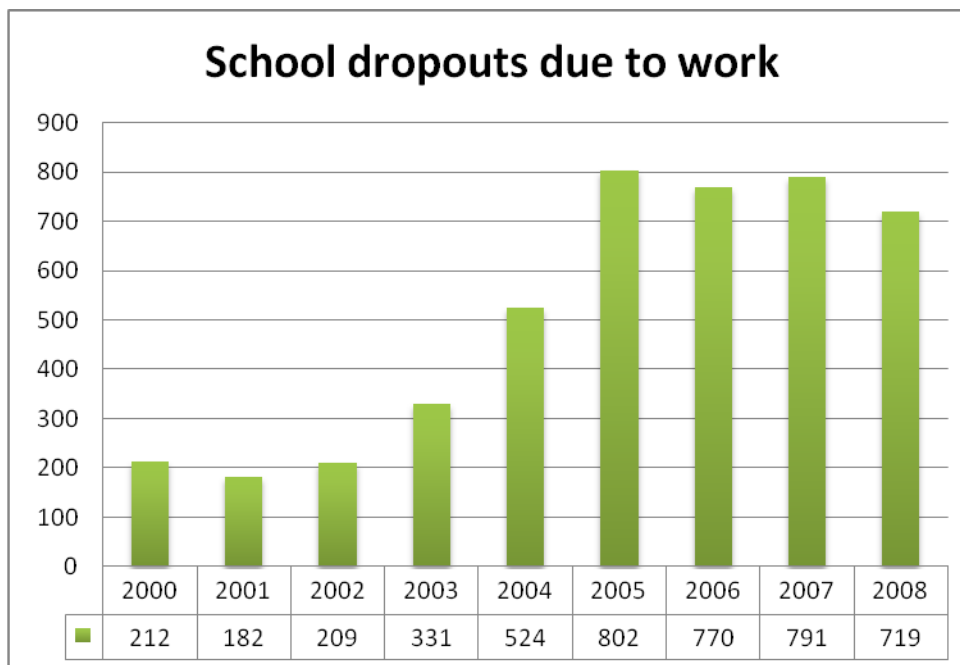


Figure 3.3.6

Chapter 4 - Statistical analysis and model

In our analysis, Macau is a tourism destination and tourism expert William Gartner defines sustainable tourism (ST) as the sum of the changes of three factors - economical/financial, social, and environmental - as follows:

$$ST = \Delta \text{ Economy} + \Delta \text{ Society} + \Delta \text{ Environment}$$

Therefore, we have three questions in our analysis:

1. Does the development of hotel industry affect the economy, society and environment in Macau?
2. Do these three elements have some impacts on Macau tourism development?
3. Does Macau tourism development correlate with the hotel development?

Based on the information we got, we defined the secondary data from 2000 to 2008 into our model:

In the *development of hotel industry*, we selected the data as hotels and guesthouses numbers.

In the *society aspect*, we selected the data as unemployment rate, crime cases and number of imported labor.

In the *environment aspect*, we selected the data as electricity consumption, air pollution and noise complaint cases.

In the *economy* aspect, we selected the data as CPI, hotel staff average income, inflation rate and GDP (based on 2002).

In the *development of tourism industry*, we selected the data as length of stay, number of visitors and number of in house guest.

The model we assumed is shown on the next page.

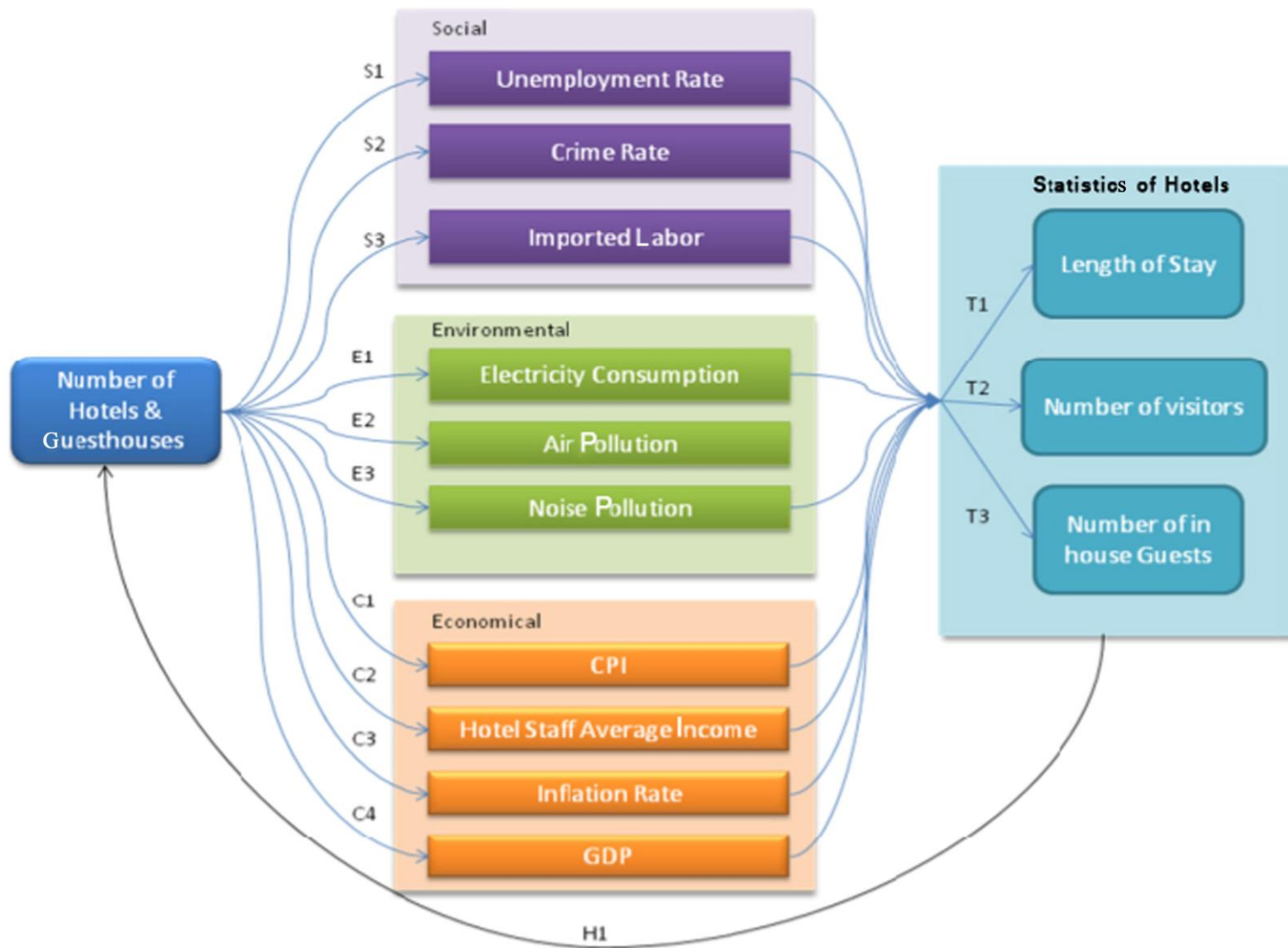


Figure 4.1

In our model, we used the regression analysis to test the data how correlated they are and here are the findings:

The significant of the regressions: S1 (0.000), S2 (0.000), S3 (0.000), E1 (0.000), E2 (0.731), E3 (0.000), C1 (0.000), C2 (0.000), C3 (0.000), C4 (0.000), T1 (0.000), T2 (0.000), T3 (0.000), H1 (0.000).

In the model, we can find that only E2 (0.731), the air pollution, does not have the statistically correlation with the development of hotel industry in Macau since there are other main factors affecting the air condition of Macau rather than hotels. Therefore, we moved it at the later analysis since our objective is mainly focusing on the impacts of hotel industry.

Moreover, we found that the economy aspect has the highest correlation with Macau tourism development. That states the economy growth in Macau can contribute a lot on the tourism industry since government can have more capital to develop the tourism facilities and promotion of Macau. Furthermore, during economy growth, the unemployment rate drops and more human resources can participate in the industry.

For the tourism development factors, as we know that tourists are always the main customers of hotel. Therefore, we found out that the number of visitors to Macau is the most correlated with the development of hotel industry.

For more details about the statistical analysis, please refer to appendix I to III

Chapter 5 – SWOT analysis

SWOT analysis is a method on strategic planning which involve both internal and external factor, including strength, weakness, opportunity and threat. The strength here means the unique ability that Macau has and its advantages, weakness is something that is harmful to our strategy which is our internal disadvantages. Opportunity is external factor that help to achieve Macau's sustainable tourism and threat is the external factor that hider strategy and growth.

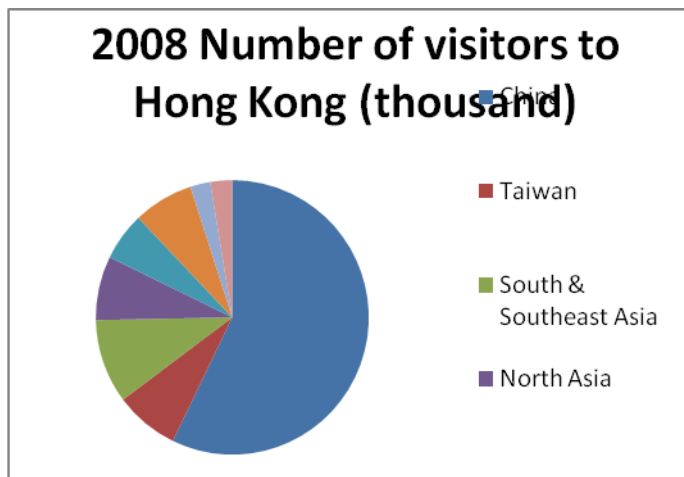
Before looking into the SWOT, we have to indentify some competitors to our tourism development. Hong Kong and Singapore was chosen since the two locations are close to Macau and these two tourism destination are the most competitive to Macau.

5.1 Main Competitors

Hong Kong

Hong Kong, an international city, locates in China with 1 104 square kilometers totally area. Its population was approximately 6.98 million in 2008. It has the similar climate and geographic situation with Macau. Moreover, it is the world's 12th largest trading economy and its GDP was HK\$1,653.6 billion in 2008²⁵.

In its tourism industry, it takes the same main tourist market, China, with Macau²⁶. Therefore, Hong Kong is a main competitor to Macau. In the tourism development, it encourages the growth to be diversity with different elements ²⁷. In Hong Kong, it has different aspects of attractions that can appeal to different group of tourist. For example, it has the culture & heritage sites, Museums and Architecture that can attract people who love historical items. Moreover, for the food and shopping, Hong Kong is named as the paradise of shopping and cuisine in Asia. Therefore, it is a



²⁶Visitor Arrivals by Country/Territory of Residence (2008), Hong Kong Census and Statistics Department
<http://www.censtatd.gov.hk/hong_kong_statistics/statistics_by_subject/index.jsp?subjectID=10&charsetID=1&displayMode=T>

²⁷Hong Kong Tourism Board 香港旅遊發展局
<<http://www.discoverhongkong.com/usa/attractions/architecture.html>>

main attracting issue for tourist, especially for families. In addition to the world known theme park, Hong Kong Disneyland, Ocean Park and Wetland, Hong Kong is really a nice place for a family vacation.

Figure 5.1.1

For the hotel industry, since it has developed the image of international tourism destination for decades, the development of hotel is also well developed. It had 695 Hotels/Guest Houses in 2008. Moreover, as the long history of MICE industry, it contributes the hotel industry goes one more steps than its competitors. In the Hotel Club Awards Asia 2008, many hotels in Hong Kong won awards in the result, for example, the Most Favorite Hotel in Asia-The Peninsula Hong Kong²⁸. It really proves how successful hotel industry is in Hong Kong.

Furthermore, the well organized city development plan and transports such as MTR and Hong Kong international airport definitely are the advantages that supporting the whole sustainable tourism development.

Singapore

Singapore is one of the most popular travel destinations in Asia. It was the British Colony in 1824. The total area is 710.2 km² and its total visitor arrivals reached around 10.1 million²⁹, which one third of them are from East Asia. More than 28,000³⁰ hotel rooms are available in Singapore in 2008 and the average occupancy is around 81%.

One of the most critical points is that Singapore legalized gambling and the comprehensive hotel complexes are scheduled to open at the northern shore of Marina Bay in 2009. The Singapore Government is transforming the city area by lighting up the attractions and commercial buildings. In a country with limited land space, a history that dates only to the early nineteenth century and relatively few natural attractions, different policies and strategies aimed at promoting and championing tourism in Singapore. The cultural aspects and tourism attractions contribute to make this city as one of the unique destinations.

²⁸ *Hotel Club Awards Asia2008*

<<http://www.hotelclub.com/postasiaawards08/listofawardwinners.html>> , Retrieved on 28 June 2009

²⁹ Singapore Tourism Board (2009), *Visitor Arrival*

³⁰ Singapore Tourism Board (2009), *Hotel statistics*

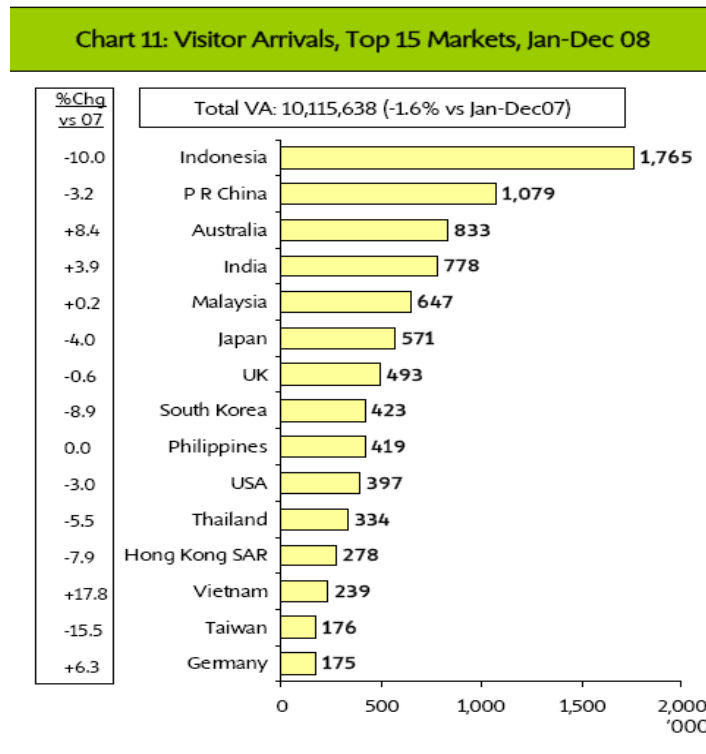


Figure 5.1.2

From the figure (Soklan, 2009) we can see that mainland Chinese is the second main target of Singapore. As we know that Singapore is a well known city in the world, and Tourism industry is one of the major leading industries in Singapore, therefore the Singapore tourism board has set up several development strategies in order to increase the visitor arrival amount to 1.5 million by 2012.³¹ One of them is the Project of BOOST which is Building On Opportunities to Strengthen Tourism. Singapore Tourism Board (STB) uses about HK \$460 millions to enhance the service standard of travel industry and strengthen its travel competitiveness in a long run. And also the Government is highly support the development of Singapore, such as the “2009 Reason to enjoy Singapore”³².

³¹ 周偉娜, 2008. 新加坡旅遊的發展戰略

³² Singapore Tourism Board (2008),
<<http://app.stb.gov.sg/asp/index.asp>>, Retrieved on 28 June 2009

5.2 SWOT analysis

Strength

Support from Chinese Government

The Free Individual Traveler Scheme was carried out since 2003. Mainland is expected to be the source market with the greatest growth potential and the most important source of visitors for Macau. There are currently 49 Mainland cities implementing this scheme. There were 22.9 million tourists visiting Macau in 2008. This scheme encourages more Chinese tourists visiting Macau and facilitates the tourism development in Macau.

Casinos in Macau

Macau is the only region where gambling is legal in China. The casinos in Macau have played a unique and influential role in relations between China and the West. After the legalization of casino and gaming, different investors from international company started investing in the Hotel industry. Numerous gambling establishments are available in Macau which becomes the popular spots for the tourists including many well-known brands. Gambling revenues from the casinos is the greatest income of Macau Government, which is much higher than in Las Vegas. Besides the development in Macau peninsula and Taipa, The Cotai Strip located at the reclaimed land between Coloane and Taipa are now developing the hotel and casino infrastructure. The diversification of casinos in Macau would definitely be the tourism advantage compare with Hong Kong and Singapore.

Unique Portuguese cultural background

Macau is a place which combines Chinese and Portuguese culture. This unique history background builds up Macau with a unique image which is reflected in historical buildings and streets. This special selling point of Macau can attract tourists, and this gives room for developing potential markets of the hotel industry. Furthermore, there are many special events and festivals hold in Macau every year. There are many traditional festivals such as Dragon Boat Festival or international festivals such as Macau

International Firework Display Contest (MGTO, 2009)³³, it is a unique characteristic of Macau and it does attract a large number of tourists to visit Macau during these festivals. According to statistics, the occupancy rate of hotel room slightly increased in the fourth quarter of each year since there are more festivals and events hold in this period. This proves that various festivals and events held in Macau had influence hotel industry significantly.

Destinations close to each other

Macao is a relatively small city comparing with Hong Kong and Singapore. The easy accessibility of different parts of the city probably has decreased the actual need and incentive of tourists and visitors to consider the location of accommodation (Lam, et al, 2009). The location of the hotels is taken into less consideration since tourists can take reasonable priced transportation to reach the desired destination. Moreover, Macau Light rail will be established in late 2011. The 20km line will run along Macau Peninsula and Taipa Island, linking various casinos with the Border Gate checkpoint, the Hong Kong-Macau Ferry Terminal and the airport (Hu, 2007)³⁴. Thus, it offers more opportunities to hotels to attract more customers and the tourists can easily approach those attractions, hotel and casino through any kind of transportation system in Macau.

Weakness

Lack of comprehensive transportation system

In terms of the aviation industry, the Macau International Airport is comparatively smaller than those of competitors. There is less airline and direct flights available in Macau. The route is mainly short-haul with limited selection. Only two local carriers in Macau and the business plan and marketing activities are limited. It would be one of the restrictions in tourism development of sources markets.

³³ Macau Government Tourist Office. (2009). *Macau Public Holidays, Events & Festivals 2009*.
<<http://www.macautourism.gov.mo/en/events/calendar.php?yr=2009>>

³⁴ Hu F.Y. (Oct 14, 2007). South China Morning Post. *Macau light rail goes ahead without stops in poor areas*.
<<http://macautransportation.blogspot.com/2007/10/macau-light-rail-goes-aheadwithout.html>>

Fresh development of MICE industry

The hotel complex provides sufficient hardware for the MICE industry and the Macau Government is now diversifying the industry development. With the accommodation and transportation available, MICE industry is in the proposal list. However, the MICE business is far less the neighbor city.

Shorter length of stay

The average length of stay of Macau tourists is about one day³⁵, and it is believed that this is due to the lack of tourism facilities to lure the visitors³⁶. On the other hand, 60% of the visitors in Hong Kong are tourists who stay for one night or even longer. In comparison, Macau hotel occupancy is lower than Hong Kong and Singapore since 53.7% (12323296/ 22933185) of the visitors are excursionists who do not stay overnight³⁷. This shows that it is important for Macau to develop more attractions so that tourists will stay longer and spend more in hotel and other related industries.

Lack of diverse entertainment

Unlike the Sentosa in Singapore, Ocean Park and Disneyland in Hong Kong, there is lack of diverse entertainments in Macau. The Fisherman's Wharf which is the first theme park in Macau, captures less number of tourist than expectation. The entertainment in Macau would be of the disadvantages in Macau. Hopefully, after the completion of the brilliant hotel complex, there are many entertainment can be offered to the tourist such as the theater, live performance and nightlife etc.

Non-sufficient professional labor resource to support the tourism and hospitality industry

³⁵ Macau Statistic and Census Service (2008), *Tourism statistics*.

³⁶ Monetary Authority of Macao: Pao W. J. (2004). *Recent Developments and Prospects of Macao's Tourism Industry*..

³⁷ Macau Statistic and Census Service (2008) , *Visitors statistics*

Macau has had a problem with staffing the hotels and casinos of its rapidly growing industry (Hobson, 1995).³⁸ There is a shortage of trained local staff, and it is hard to find quality people as Macao is a small place with limited labour force. Several hotels have admitted that there have been many complaints about the poor quality of service (Hobson, 1995), however, the industry is still lacking in manpower for service improvement (Pao, 2004). There is not sufficient number of labor forces to cope with the development plan of Macau. Compare to Hong Kong and Singapore, Macau has less professional colleges to train up people join the tourism and hospitality industry. There are more world class institutes or colleges in these places and the people there are more competitive. Therefore, the new 5-Stars casinos and hotels usually hire people in Hong Kong, Singapore or other foreign places for management positions.

However, we can see the educated people in Macau are increasing. There should be a potential for Macau to have more college educated residents to take part in management level.

Lack of land for future development

Until 2007, Macau's total land area was 29.2 km²³⁹. There are limitations in terms of new infrastructure and development due to limited area. It is true that land reclamation can help to solve this problem. However spare area for reclamation will be saturated in the very near future. Moreover, there are limited natural resources for tourism development in Macao (Pao, 2004)⁴⁰. Macau has to rely on China in supplies and Hong Kong on transportation network such as terminals and airport.

Opportunity

Free economies

Hong Kong and Singapore are two places have the freest economy in the world⁴¹, the 2009 economic freedom index showed that they ranked 1st and 2nd respectively in terms of economic freedom. Macau, as a tourism developing city, had opened doors to foreign investors since the liberation of gaming license in

³⁸ Hobson P. JS (1995). *Macau: gambling on its future?*

³⁹ Macau Statistic and Census Service (2007), *Total land area of Macao*

⁴⁰ Pao W. J. (2004). *Recent Developments and Prospects of Macao's Tourism Industry.*

⁴¹ 2009 Index of economic freedom, (2009). Heritage Foundation & Wall street journal
<<http://www.heritage.org/Index/Ranking.aspx>>

2003. The 2009 economic freedom index ranked Macau as ranked 6th out of 41 Asia-Pacific countries⁴². From the index, we can see Hong Kong, Singapore and Macau have maintained a good reputation of freedom investment to the world. With this basic support, these three places can attract more foreign investors and hence have more opportunity for tourism industry to grow.

International airports' existence

Hong Kong, Singapore and Macau have international airport, and this creates easy accessibility and is convenient to tourists. Although both Hong Kong and Singapore have advanced airport facilities and direct flights to many international big cities, Macau still can open other markets and has potential to develop. In the recent years, Macau has been attracting more low-cost airline. Macau can change the focus to other nearby places for potential markets, such as Japan, Korea, Australia, etc. This is still big potential for Macau and could develop more market segments.

Building of Hong Kong-Zhu Hai-Macau Bridge

As per Mr. Wen Jiabao, the Premier of the State Council of the People's Republic of China, the construction of the Hong Kong-Zhuhai-Macau Bridge will begin in 2009, and it is expected to be completed in 2015 (Singpao, March 14, 2009)⁴³. The building of this bridge benefits the transportation network of the Pearl River Delta region, including Hong Kong and Macau, and this makes the accessibility to Macau more convenient. In this way, more tourists will come to Macau and enhance Macau's economic growth and brings more potential business to the hotel industry.

⁴² 2009 Index of economic freedom, (2009). Heritage Foundation & Wall street journal
<<http://www.heritage.org/Index/Country/Macau>>

⁴³ Singpao (March 14, 2009). 港珠澳大橋今年動工

Threat

Financial Crisis

The financial tsunami in 2008 has great effect on all countries in the world, and it was proven to be affecting Macau's number of tourists and casino's income. As many US companies were affected in this financial crisis, the Cotai projects in Macau were put on hold and many labor were laid off in order for the company to reduce costs. For example, Las Vegas Sands had layoff 9,000 migrant construction workers when the new Cotai construction projects were suspended. The latest news also reported that it is going to further cut labor by 3000 to 4000 in the coming September⁴⁴. In this example, we can see the global economic situation is closely affecting the labor market as it will bring about severe layoffs or fewer job opportunities. However, the problem of unemployment might be mostly affecting the non-resident workers of Macau. Unemployment will increase not only on the big casinos, hotels and construction companies but also in SME [small and medium enterprise] sector... the problem may not be serious as most of the fired workers will be non-residents⁴⁵. On the other hand, Hong Kong's primary economic engines – property, finance and international trade – are all losing momentum. In 2008's closing months, Hong Kong saw its first quarter of negative year-on-year growth figure since the SARS outbreak six years ago. Output dropped 2.5% year-on-year in the last quarter of 2008 on the back of slumping domestic demand (which fell 6.9%), leaving full-year 2008 gross domestic product growth of a mere 2.5%, against our previous forecast of 4.4% growth⁴⁶. For Singapore, since its economy shrank between July and September in 2008, it was confirmed to be the first Asian country in recession in the financial tsunami. Singapore's economy started going down as figures came out to be worse than the previous government prediction. Singapore is heavily reliant on exports and the global slowdown means demand for its produce could decline significantly⁴⁷. In conclusion, the global financial situation can heavily affect the countries' own economy. This is beyond the government's control and is unpredictable.

⁴⁴ Macaunews (15 May 2009). *Las Vegas Sands plans to cut around 4,000 jobs in Macao*.

<http://www.macaunews.com.mo/index.php?option=com_content&task=view&id=409&Itemid=13>

⁴⁵ Matias J. C. (2008). Future Imperfect, *Macau Business*, Vol. 56, pp20-21.

⁴⁶ Daniel P. C. (2009). Hong Kong: A ship in rough seas, *Hong Kong Journal*

<http://www.hkjjournal.org/archive/2009_summer/2.htm>

⁴⁷ BBC News (21 Nov 2008). *Singapore officially in recession*.

<<http://news.bbc.co.uk/2/hi/business/7741086.stm>>

Outbreak of contagious disease

There are two widely spread disease in the recent years, one is SARS in 2003 and the other is Influenza A (H1N1) virus in 2009. This kind of contagious illness can seriously reduce people's travel intention and affect the global tourism industry. Since the outbreak of H1N1 Influenza A, Hong Kong, Singapore and Macau has receive a decline in the number of tourist arrivals.

New entrants may have a more progressive development

Recently, Many Asia-pacific countries have legalized gambling, such as Korea, Philippines, Thailand, Malaysia, Vietnam, and Australia in the 1990s⁴⁸. Literature also revealed that Macao's competitors have tried to strengthen customer loyalty and broaden their customer base⁴⁹. More and more countries around Macao have allowed gambling and will affect the number of tourist to Macao and also to Singapore. In addition, since more and more Asian countries are developing their tourism industry, Macau, Hong Kong and Singapore will be facing tough competitions in the near future. Macau should focus to improve the service quality to attract visitors.

⁴⁸ Su Y. (2007). *Discussion on the strategy for hotel risk management in Macao*

⁴⁹ Pao W. J. (2004). Recent Developments and Prospects of Macao's Tourism Industry. *Monetary Authority of Macao*.

Chapter 6 – Recommendation & Conclusion

In conclusion, Macau is now facing several external competitions from nearby tourism destination. If Macau seeks to achieve sustainable tourism development, it is important for the government to consider the three aspects: economical, social and environmental, and try to implement strategies that balance these three areas. Based on the above findings, we have come out with several recommendations which might be useful for obtaining the goal of sustainable development and maintain Macau's competitiveness without sacrificing the local community.

Tourism product diversification

Macau's main tourism products are divided into two parts: world famous casinos and heritage sites. Historic Centre of Macao which is on the World Heritage List. However, the average length of stay of hotel guests in 2008 is 1.44 nights, according to DSEC statistics, 2009⁵⁰. There is a need for Macau to diversify its tourism products and aim to longer the length of stay. Diversifying the attractions can create more vary entertainment for tourists and can attract different market segments. This can include building new tourism attractions and attract more foreign investments to enhance Macau's image as an international tourism destination.

Improve existing products

It is important for a tourism destination to continuously improve its tourism products in order to cope with the rapid changing environment and maintain its competitiveness. For Macau, these measures might include proper preservation of the heritage sites, improving transportation network, improving the immigrations, improving accessibility to and from Macau, etc. As mentioned above, tourists' satisfaction rate towards Macau's transportation obtained the lowest among other tourism sectors⁵¹. Recently, the government had tried to improve the transportation problems by rearranging public bus routes, which is helping a lot for the transportation network. However, the bus routes are hard for international tourists to

⁵⁰ The average length of stay per visitor in 2008 is 1.44 nights. Source: Macau Statistics and Census Service (2008), *Tourism statistics*.

⁵¹ The number of satisfied visitors is declining since 2003, and most visitors rated transportation as fair. Source: Macau Statistics and Census Service (2003-2008), *Tourism statistics*.

understand as all signage and information boards are written in Portuguese and Chinese only. Comparing with other international tourism cities, Macau is comparatively weak in these aspects. We would recommend the Macau government to add English to the information boards and signage, especially in the transportation aspects in order to make the tourists' travel experience more convenient.

Environmental moves implemented by the Macau government

There is a lot that the Macau government can do to help preserving the environment and reduce pollution. Macau government has brought natural gas public transportation into Macau and aim to reduce carbon emissions. Since most tourists will take tour buses or public buses when they travel around Macau, having natural gas buses can help to reduce the impact on environment. The whole investment of this project will be 10 billion and totally last for 25 years. The government believes that the natural gas network will cover the whole Macau in 5 years and the natural gas public transportations can start the earliest in 2011 (MacaoDaily, 2 April 2009)⁵². In addition to this project, the government is going to sponsor car owners to transform their existing car into natural gas cars and also offer subsidies for car oil stations and infrastructure in this project.

Furthermore, using renewable energy can be a long term approach for saving energy, one of them is solar energy. However, this might be difficult for private business as installing solar panels can be very expensive and usually they are not willing to sacrifice their profit for the environment. Recently, the government is trying to experiment in using solar energy to supply hot water for one of the public swimming pools (Macau Office for the Development of the Energy Sector, 2009)⁵³. If this is proved to be successful, implementing solar power in hotels can help to save energy and electricity costs.

Promoting environmental campaigns in hotels

Environment is one of the components to achieve sustainable tourism development. There are several approaches that hotels can implement in order to save energy consumption and bring benefits to the local

⁵² Macaodaily, (2 April 2009). 天然氣公交兩年內營運.

<http://www.macaodaily.com/html/2009-04/02/content_302512.htm>

⁵³ Macau Office for the Development of the Energy Sector (April 2009). 簡訊, Vol. 5, pp2.

environment. Take some examples from foreign countries, a hotel in Australia, spent US\$2.4 million installation on solar photovoltaic reduce the hotel's energy consumption by 40% to 80%, depending on time of year. Another example is a hotel in Switzerland started heating ecologically through a district heating network. The heating enterprise burns wood, which heats the water in the pipelines (Weinstein, 2009)⁵⁴. Aside from these methods, hotels can also saving energy and costs by encouraging hotel guests to reuse towels and bed sheets, reducing the use of detergent, use guestrooms' leftover shampoo for public area carpet cleaning, etc. It is also important for business sectors to know their role for being social responsible to the society. One of the good examples is the Westin Resort Macau; they run environmental campaign in the hotel which monitors the consumption and waste produced every day. According to their figures, they avoided 18000 tones of CO2 emission and they have a water treatment plan to clean the discharge waste eater (Paula C., 2009)⁵⁵.

On the other hand, resource efficient tourism facilities can save money without sacrificing customer comfort and convenience, and can enhance the quality of life in a hotel (Bohdanowicz, et al, 2001)⁵⁶. Hotels can implement this into the design, such as using sunlight to reduce the number of lights in daytime. These ideas can make customers feel more comfortable and with good management, indoor air quality can also be improved. Furthermore, the hotel staff can also have a better working environment, which is good for long-term. This can also bring good profits to the tourism sectors.

Improving Macau's service personnel quality

As mentioned in the previous section, the school dropouts is increasing recently due to high wage. This shows that some high school students left school and enter casino for high paid positions. This is an issue need to be concerned as this will seriously affect Macau's future labor quality. According to Ms. Leong from a management consultancy that specializes in human resources, more than 56% of Macau's current 330,000 workers have not achieved secondary school qualification⁵⁷. If this trend of leaving school continues, the situation will be worsen as most quality positions will be taken over by expatriates from

⁵⁴ Weinstein J. (May 2009). Green Power: Hotels implement new systems and programs to give back to the community and save money. *HOTELS*.

⁵⁵ Paula C. (2009), Keeping it clean, *Macau business* - May 2009, pp 66-67

⁵⁶ Bohdanowicz P., Kallhauge C. A., Martinac I. (2001). Energy Efficiency and Conservation in Hotels - Towards Sustainable Tourism, *4th International Symposium on Asia Pacific Architecture*.

⁵⁷ Tuck S. (2008). Labour of love, *Macau Business*, Vol. 53, pp32-33.

other places such as Hong Kong, Singapore and Malaysia. Macau government had tried to resolve this problem by amending the casino working age from 18 to 21, and there should be further promotion in high school to encourage students to continue their studies and for better future.

Macau's heavy reliance on expatriate labor is a stop gap measure to solve the skills shortage and should not be relied upon as a long-term solution⁴⁵⁸. Therefore, it is important for the government to encourage companies to make positive moves such as offering training and promotion opportunities for locals so as to make them qualified for higher positions. Moreover, a control on imported labor in guaranteeing jobs for locals is also essential.

Furthermore, there is a need for Macau's local school to focus more on language training. Comparing with other international tourism destination such as Hong Kong and Singapore, Macau's overall proficiency in English is lower. In order to become an international city, it is vital for the government to promote the usage of English as a foreign language.

⁵⁸ Tuck S. (2008). Labour of love, *Macau Business*, Vol. 53, pp32-33.

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Appendix I: Statistical result by SPSS

Regression model between numbers of hotel to sustainable tourism factors

1. Number of hotel & guesthouses to Social factor

a) Unemployment rate (S1)

Regression:		Summary			
Independent variable:	Unemployment rate	R Square	Sig	B	t
Dependent variable:	Number of hotels & guesthouses	0.863	0.000	21.697	-9.945
				-0.227	

The result shows that each increase in number of hotels & guesthouse have a decrease in unemployment rate by 0.227 units. 86.3% variation of unemployment rate can be explained by the number of hotels & guesthouses. The answer is significant since sig value is 0.000 and t-test shows that it is outside ± 1.96 .

b) Crime Cases (S2)

Independent variable:	Crime Cases	R Square	Sig	B	t
Dependent variable:	Number of hotels & guesthouses	0.743	0.000	-2,462.315	9.920
				68.990	

By using regression method, it shows the relationship between crime cases to the number of hotel. R square is 74.3% which means that 74.3% variation of Crime cases can be explained by the number of hotels & guesthouses. Its regression equation is upward sloping since 68.99 is positive number, each unit increase in number of hotels & guesthouses means 68.99 units increase in crime cases. The result is significant as sig value is 0.00 which is highly significant and the t-test is above ± 1.96 also means this result is significant.

c) Imported Labor (S3)

Independent variable:	Imported labor	R Square	Sig	B	t
Dependent variable:	Number of hotels & guesthouses	0.866	0.000	-283,823.56	14.803
				4,429.027	

The relationship of the imported labor and number of hotels & guesthouses is highly significant, which the t-test is much higher than 1.96 and sig value is 0.00. 86.6% variation of imported labor can be explained by the number of hotels & guesthouses. It shows that each increase in one unit of number of hotels and guesthouse have an upward sloping by 4429 units increase in imported labor.

2. Number of hotel & guesthouses to Economical factor

The result of the entire three economic factors is also highly significant; all of them which are CPI, GDP, inflation rate and average wages of hotel staff can be represented by the increase of number of hotels and

guesthouses. The R square ranged from 76.7% to 83.5% and all of them are upward sloping. Every increase in unit of hotels & guesthouses shows an increase on the economical factor by 0.655 to 1307.825.

Regression:		Summary			
Independent variable:	<i>CPI (C1)</i>	R Square	Sig	B	t
Dependent variable:	Number of hotels & guesthouses	0.835	0.000	2.187	13.136
				1.403	

Independent variable:	<i>Hotel staff average income (C2)</i>	R Square	Sig	B	t
Dependent variable:	Number of hotels & guesthouses	0.822	0.000	-4,781.838	12.545
				127.386	
Independent variable:	<i>Inflation rate (C3)</i>	R Square	Sig	B	t
Dependent variable:	Number of hotels & guesthouses	0.799	0.000	-46.522	11.612
				0.655	

Independent variable:	<i>GDP (C4)</i>	R Square	Sig	B	t
Dependent variable:	Number of hotels & guesthouses	0.767	0.000	-75,909.555	10.581
				1,307.825	

3. Number of hotel & guesthouses to Environmental factor

a) Electricity consumption (E1)

Independent variable:	Electricity consumption	R Square	Sig	B	t
Dependent variable:	Number of hotels & guesthouses	0.594	0.000	-1,345.067	7.058
				25.438	

The electricity consumption also has positive relationship with the increase number of hotels & guesthouse. Each increase number of hotels & guesthouse has an increase unit of electricity consumption by 25.438. 59.4% can be represented by the variation of the number of hotels & guesthouse to the electricity consumption. The result is highly significant in which the sig value is 0.000 and t-test show 7.058 (much higher than 1.96).

a) Air pollution (no relationship) (E2)

Independent variable:	Air pollution	R Square	Sig	B	t
Dependent variable:	Number of hotels & guesthouses	0.004	0.731	36.657	0.347
				0.136	

The regression between air pollution and number of hotels & guesthouses is not significant which t-test shows it is inside the range of ± 1.96 . Sig value is 0.731 which is larger than 0.05 and it is not significant and not representative. Therefore, we could understand that the number of hotels and guesthouses has no

relationship with air pollution and we have to accept the null hypothesis, which it needs further research on this topic.

b) Noise pollution (E3)

Regression:		Summary			
Independent variable:	Noise pollution	R Square	Sig	B	t
Dependent variable:	Number of hotels & guesthouses	0.692	0.000	-133.861	8.739
				2.089	

The noise pollution problem also got a positive relationship which means an increase in number of hotels & guesthouses will have 2.089 unit increases in noise pollution. The result is significant which the sig value is 0.000 and t-test is much higher than 1.96. R square is 69.2% which means variation of noise pollution can be explained by number of hotels & guesthouses.

Appendix II: Statistical result by SPSS

Correlation and Multiple Regression model between hotel statistics⁵⁹ to sustainable tourism factors

a) Correlation between hotel statistics, number of hotels and sustainable tourism factors

⁵⁹ Hotel statistic includes length of stay, number of visitor's arrival and in house guests.

		Unemployment rate	Crime cases	Imported labor	Electricity consumption	Air pollution	Noise pollution	CPI	Inflation rate	GDP	Hotel staff average income	In house guest	No. of visitors arrival	Length of stay	Hotel number
Unemployment rate	Pearson Correlation	1	-0.878	-0.836	-0.758	-0.141	-0.894	-0.743	-0.952	-0.951	-0.847	-0.930	-0.970	-0.147	-0.863
	Sig. (2-tailed)		0.000	0.000	0.000	0.411	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.392	0.000
	N	36	36	36	36	36	36	36	36	36	36	36	36	36	36
Crime cases	Pearson Correlation	-0.878	1	0.931	0.854	0.039	0.897	0.881	0.885	0.950	0.942	0.944	0.861	0.450	0.862
	Sig. (2-tailed)	0.000		0.000	0.000	0.820	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.000
	N	36	36	36	36	36	36	36	36	36	36	36	36	36	36
Imported labor	Pearson Correlation	-0.836	0.931	1	0.852	0.006	0.874	0.971	0.869	0.927	0.979	0.926	0.825	0.551	0.930
	Sig. (2-tailed)	0.000	0.000		0.000	0.970	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	N	36	36	36	36	36	36	36	36	36	36	36	36	36	36
Electricity consumption	Pearson Correlation	-0.758	0.854	0.852	1	-0.309	0.786	0.798	0.775	0.825	0.829	0.836	0.753	0.403	0.771
	Sig. (2-tailed)	0.000	0.000	0.000		0.067	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015	0.000
	N	36	36	36	36	36	36	36	36	36	36	36	36	36	36
Air pollution	Pearson Correlation	-0.141	0.039	0.006	-0.309	1	0.073	-0.012	0.071	0.131	0.044	0.100	0.159	0.073	0.059
	Sig. (2-tailed)	0.411	0.820	0.970	0.067		0.674	0.943	0.680	0.447	0.799	0.560	0.355	0.674	0.731
	N	36	36	36	36	36	36	36	36	36	36	36	36	36	36
Noise pollution	Pearson Correlation	-0.894	0.897	0.874	0.786	0.073	1	0.815	0.884	0.901	0.893	0.904	0.838	0.348	0.832
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.674		0.000	0.000	0.000	0.000	0.000	0.000	0.038	0.000
	N	36	36	36	36	36	36	36	36	36	36	36	36	36	36
CPI	Pearson Correlation	-0.743	0.881	0.971	0.798	-0.012	0.815	1	0.829	0.848	0.957	0.863	0.714	0.655	0.914
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.943	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000
	N	36	36	36	36	36	36	36	36	36	36	36	36	36	36
Inflation rate	Pearson Correlation	-0.952	0.885	0.869	0.775	0.071	0.884	0.829	1	0.934	0.884	0.908	0.899	0.278	0.894
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.680	0.000	0.000		0.000	0.000	0.000	0.000	0.100	0.000
	N	36	36	36	36	36	36	36	36	36	36	36	36	36	36
GDP	Pearson Correlation	-0.951	0.950	0.927	0.825	0.131	0.901	0.848	0.934	1	0.929	0.978	0.935	0.347	0.876
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.447	0.000	0.000	0.000		0.000	0.000	0.000	0.038	0.000
	N	36	36	36	36	36	36	36	36	36	36	36	36	36	36
Hotel staff average income	Pearson Correlation	-0.847	0.942	0.979	0.829	0.044	0.893	0.957	0.884	0.929	1	0.941	0.818	0.542	0.907
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.799	0.000	0.000	0.000	0.000		0.000	0.000	0.001	0.000
	N	36	36	36	36	36	36	36	36	36	36	36	36	36	36
In house guest	Pearson Correlation	-0.930	0.944	0.926	0.836	0.100	0.904	0.863	0.908	0.978	0.941	1	0.925	0.362	0.882
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.560	0.000	0.000	0.000	0.000	0.000		0.000	0.030	0.000
	N	36	36	36	36	36	36	36	36	36	36	36	36	36	36
No. of visitors arrival	Pearson Correlation	-0.970	0.861	0.825	0.753	0.159	0.838	0.714	0.899	0.935	0.818	0.925	1	0.129	0.859
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.355	0.000	0.000	0.000	0.000	0.000	0.000		0.453	0.000
	N	36	36	36	36	36	36	36	36	36	36	36	36	36	36
Length of stay	Pearson Correlation	-0.147	0.450	0.551	0.403	0.073	0.348	0.655	0.278	0.347	0.542	0.362	0.129	1	0.394
	Sig. (2-tailed)	0.392	0.006	0.000	0.015	0.674	0.038	0.000	0.100	0.038	0.001	0.030	0.453		0.018
	N	36	36	36	36	36	36	36	36	36	36	36	36	36	36
Hotel number	Pearson Correlation	-0.863	0.862	0.930	0.771	0.059	0.832	0.914	0.894	0.876	0.907	0.882	0.859	0.394	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.731	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.018	
	N	36	36	36	36	36	36	36	36	36	36	36	36	36	36

From the correlation between the hotel statistic, number of hotels and sustainable factors, we found that there is no relationship from air pollution to other factors. Therefore, we ignore the data for further multiple regressions. On the other hand, there are no relationship between unemployment rate to length of stay and inflation rate to length of stay; therefore, this two data will be ignored in multiple regressions in the later part.

b) Multiple regression between in house guest to sustainable tourism factors

Multiple Regression:		Sustainable factors	Standardized Coefficients	Sig.	R-square
			Beta		
Independent variable:	Sustainable factor	Unemployment rate	-0.470	0.000	0.978
Dependent variable:	In house guest (thousand)	Crime case	-0.092		
		Imported labor	-0.917		
		Electricity consumption	0.128		
		Noise pollution	0.036		
		General CPI	0.636		
		Hotel staff average income	0.390		
		Inflation rate	-0.512		
		GDP (based on 2002)	0.906		

A multiple regression is constructed about the relationship of in house guest to all of the significant sustainable factors as calculated. The result is highly significant which the value is 0.000 and R square is 97.8% which means it is highly representative. The most relatively important sustainable factor is GDP in which the beta value is 0.906. It is because the larger the absolute value of the standardized coefficient beta means the more relative importance to predict the number of in-house guests.

c) Multiple regression between number of visitors (in thousand) to sustainable tourism factors

Multiple Regression:		Sustainable factors	Standardized Coefficients	Sig.	R-square
			Beta		
Independent variable:	Sustainable factor	Unemployment rate	-1.110	0.000	0.965
Dependent variable:	Number of visitors (thousand)	Crime case	0.109		
		Imported labor	0.658		
		Electricity consumption	-0.005		
		Noise pollution	-0.219		
		General CPI	-0.304		
		Hotel staff average income	-0.207		
		Inflation rate	-0.184		
		GDP (based on 2002)	-0.010		

The second multiple regression was about the number of visitors and sustainable tourism factors. It was also found that there is relationship between the sustainable factors to the number of visitor's arrival. The result is highly significant as it is 0.000 and 96.5% variation of sustainable factors can be explained by number of visitors arrival. The relative important sustainable factors to number of visitors arrival is unemployment rate which got 1.11 (absolute value).

d) Multiple regression between length of stay to sustainable tourism factors

Multiple Regression:		Sustainable factors	Standardized Coefficients	Sig.	R-square
			Beta		
Independent variable:	Sustainable factor	Crime case	0.373	0.000	0.603
Dependent variable:	Length of stay	Imported labor	-0.393		
		Electricity consumption	-0.043		
		Noise pollution	-0.232		
		General CPI	1.400		
		Hotel staff average income	0.163		
		GDP (based on 2002)	-0.737		

The third regression also found that there is significant relationship between the sustainable factor to length of stay. And the most relative factor is general CPI.

Appendix III: Statistical result by SPSS

Multiple Regression model between number of hotels & guesthouses to hotel statistics

Multiple Regression:		Hotel statistics	Standardized Coefficients	Sig.	R-square
			Beta		
Independent variable:	Hotel statistics	In house guest (thousand)	0.212	0.000	0.823
Dependent variable:	Number of hotels & guesthouses	Number of visitors (thousand)	0.235		
		Length of stay	0.633		

*Hotel statistic includes length of stay, number of visitor's arrival and in house guests.

The multiple regressions can prove the relationships between each statistic of hotels to the number of hotels & guesthouses. It is highly significant and R square is 82.3%. The relative important factor is length of stay which got the highest absolute value.