



The social, economic, and environmental impacts of casino gambling on the residents of Macau and Singapore



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HIGHLIGHTS

- The viewpoints of Macau and Singapore residents about impacts of casino gambling.
- Macau residents tended to be higher scores regarding the consequences of gambling.
- Diverse viewpoints of correlation between gambling behaviors and casino influences.
- The differences of other extensively influential factors could be further studied.

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ABSTRACT

This study examines the viewpoints of Macau and Singapore residents to the development of casino gambling and the social, economic, and environmental impacts that are thought to arise. It also assesses whether differences exist between socio-demographic groupings. The sample comprised 416 respondents from Macau and 409 from Singapore. An analysis using primarily descriptive statistics indicated both sub-samples had similar viewpoints although Macau residents tended to have higher scores pertaining to the consequences of gambling. It is suggested that the differences arise due to the greater exposure of Macau residents to the influences of casino development.

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1. Introduction

Casino developments have created important contributions to the tourism industries in recent years (Wan, 2012). The numbers and capacities of casinos have rapidly grown in the Asia-Pacific region, including Australia, New Zealand, South Korea, Cambodia, Myanmar, Philippines, Macau, and Singapore (Hsu, 2006, p. xix). Therefore, casino developments have become a highly profitable sector of the economy in these regions (Siu, 2007, 2008). For instance, since the liberalization of casino licensing in 2002, gaming revenues in Macau reached a record high of \$45.09 billion U.S. dollars in 2013 and the annual revenues of casino gambling in Singapore reached \$4.1 billion U.S. dollars in 2013 (UNLV Center for Gaming Research, 2014a, 2014b). Moreover, the taxation of the casino industry has become a significant source of economic funds

for Macau's government (Gu & Tam, 2011). Conversely, the unprecedented growth and expansion of the gambling industry have had many positive and negative economic, socio-cultural, and environmental impacts (Carmichael, Peppard, & Boudreau, 1996; Lee & Back, 2006). Of these impacts, the positive benefits (such as increases in earned incomes, improvement of social welfare, and consummation of public facilities) and the negative outcomes (e.g. increase in the prices of goods, rise in crime rates, and expansion of various pollutants) are worth consideration because these events will directly or indirectly influence local residents to a certain degree.

Although issues relating to the impacts of casino gambling have been extensively examined in the context of Western countries (Garrett, 2004; Giacomassi, Nichols, & Stitt, 1999; Janes & Collison, 2004; Kang, Lee, Yoon, & Long, 2008), few studies have compared similar ethnic populations from different sovereign regions in Asia. As McMillen indicated, "despite its apparent universality, the concept of gambling has no intrinsic meaning; rather, its meaning always depends on the socio-historical context in which it occurs" (McMillen, 1996, p. 6). Therefore, it should be valuable to prudently explore how local residents in Asian regions, particularly those

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with similar ethnic and cultural heritages, label meanings or viewpoints toward the universal developments of casino gambling. This manuscript attempts to provide an explorative examination of the social, economic, and environmental impacts of casino gambling in two Asian regions: Singapore and Macau. It is crucial for strategy makers in governmental departments, casino managers, and academic researchers that the pros and cons of casino developments are made clear because this would allow the development of accessible approaches while minimizing the potentially negative impacts (Wan, Li, & Kong, 2011).

Since the legalization of gaming in 1847, Macau has been the pioneer of the gaming industry in regard to Asian casinos (Wan, 2012). In 2002, the Special Administrative Region (SAR) of the People's Republic of China opened the gaming market and has inducted new investors and business patterns, which has led to the creation of fresh elements and motives within the established gaming industry (Loi & Kim, 2010). Conversely, Singapore has been an up-and-coming market for the gaming industry: its first casino opened in 2010. Since its opening, the casinos in Singapore have immediately attracted a large crowd of visitors and have earned considerable tourism revenues (Kale & De, 2013). Macau and Singapore represent two different characters in the gaming business: the former has a long-term history of running the gaming industry, and the latter has just initiated its brand-new casino operations in recent years. These are also the only two places that are permitted to run legalized casino gambling in areas in which the majority of residents are of a Chinese ethnicity. Therefore, this study aimed to explore the following issues: (1) What are the survey responders' perceptions toward the social, economic, and environmental impacts of the establishment of casino gambling? (2) Do residents from Macau and Singapore have diverse viewpoints in relation to possible correlations between gambling behaviors and attitudes and the impacts of casino gambling operations? (3) Do residents with various social backgrounds have different opinions toward the impacts of casino gambling establishments?

2. Literature review

Tourism, as a significant form of human activity, can have major impacts. These impacts are very visible in the destination region, where tourists interact with local environment, economy, culture and society. Hence, it is conventional to consider the impacts of tourism under the headings of socio-cultural, economic and environmental impacts.

Peter Mason, 2003, *Tourism Impacts, Planning and Management*, p. 28

According to Peter Mason's perspective of tourism impacts, the nature and dimension of the impacts of casino gambling may be conceptualized as follows: gambling (or gaming), as a culture-loaded but controversial human activity, can have major impacts. A casino, which is a place that legally allows people to engage in the activities of gambling and recreational consumption, can also directly and indirectly cause impacts. These impacts are somehow tangible and intangible in the host community, in which casino gamblers interact with the local environment, economy, and society.

The contemporary casino business is a unique industry that is concentrated in Las Vegas and Macau (Gu, 2004). In fact, certain researchers have defined the socio-economic networks that are formed by the gaming, resorts, shopping, and entertainment industries in Las Vegas and Macau as "casinopolitanism" (Luke, 2011).

Although the gaming industry now provides distinguished product contents and contains service consumers from different market segments and with diverse lifestyles, it still satisfies the varied needs and desires of subjects in the same tourist locations (Hung, Lin, Yang, & Lu, 2012). Therefore, it is important to carefully examine the impacts and influences of casino gambling. After reviewing the related literature that discusses the influences of legalized casino gambling, most researchers have focused on the social, economic, and environmental spheres of influence and have explored people's pro-and-con opinions toward casino gambling (Caneday & Zeiger, 1991; Hsu, 2000; Lee & Back, 2003, 2006; Long, 1996; Perdue, Long, & Kang, 1995; Wan, 2012).

2.1. Social impacts

Because it is arduous to separate economic impacts from social influences, social impacts are regarded as the most difficult phenomenon for researchers to measure scientifically (Oh, 1999). Many studies have utilized the economic concept of "cost" to objectively measure and analyze social impact phenomena; thus the term "social cost" has become the dominant medium to identify the strength and dimension of social impacts. However, this approach, which is based on the perspective of economic impacts to analyze and discuss social cost, has triggered many controversial debates of "what social cost is" and "what the definition of social cost should be" in social science. Walker (2003, 2007), who used a different angle to examine the social costs of "gambling", suggested that a cost must, by definition, fulfill the following three criteria for it to be counted as a social cost of gambling: (1) the cost has to be social rather than private or personal, (2) the cost has to result in a real decrease in societal wealth, and (3) the cost has to result exclusively from gambling. Thus, the current related studies on the social costs of gambling have been concentrated on discussions from the following perspectives: cost-of-illness approach (Single, 2003), an economic standpoint (Collins & Lapsley, 2003), and a public health perspective (Korn, Gibbins, & Azmier, 2003). In contrast, Fong, Fong, and Li (2011) noted seven indexes of social costs in gambling that relate to social impacts: treatment costs, prevention costs, family/friends physical and psychological costs, legal costs, rent-seeking costs, regulatory expenses, and the public costs of training, promotion and research. In addition, these researchers suggested that these social costs have paid for the liberalization of casino gambling in Macau. This research asserted that the social cost of gambling in Macau had risen appropriately 163% (i.e., from \$40 million to \$106 million U.S. dollars) from 2003 to 2007. Similarly, Thompson and Schwer (2005) examined the dollar value of the social costs of gambling in Southern Nevada and discovered that each compulsive gambler imposed \$19,711 (U.S. dollars) in social costs on other community members.

Studies concerning the social impacts of casino gambling suggest that this industry has distinctively yielded both positive and negative effects toward local communities and the lives of local residents. For instance, Giacomassi et al. (1999) interviewed 128 community leaders in seven new casino jurisdictions in the USA and found that 59% of the respondents favored casino establishments in their communities, 65% believed that casinos enhanced the quality of their lives, and 77% agreed that casinos led to positive effects on their communities' economy. Gonzales, Lyson, and Mauer (2007) associated casino gambling with improvements in the quality of life regarding the social and economic well-being of both Indian and non-Indian populations in Arizona and New Mexico.

In contrast, although some researchers have found that the development of casino gambling has no direct associations with an increase in criminal activities (Janes & Collison, 2004), most studies have shown that casino gambling may be correlated with the

following social deviations: domestic violence, divorce, bankruptcy, drug and alcohol abuse, risky or illicit sexual behavior (especially prostitution), and problem gambling (Allcock, 2000; Chhabra, 2007; Harrill & Potts, 2003; Petry, 2003). Additionally, Stokowski (1996) and Long (1996), who studied gaming towns in Colorado and South Dakota, clearly indicated that the rates of criminal activities increased due to the development of casino enterprises in these two locations.

The increase in the number of pathological gamblers is another concerning issue regarding the development of casino gambling. Janes and Collison (2004) found that problem gambling had risen in the studied site from 1995 to 2000, and community leaders have also noticed that issues concerning child neglect and family problems had become more challenging and widespread during this period. Long (1996) found that there were growing demands for child protection, marriage counseling, and other social service programs in these gaming communities. However, other studies have claimed that casinos do not directly cause the issue of problem gambling (Braunlich, 1996; Room, Turner, & Ialomiteanu, 1999).

After analyzing the perspectives of residents, Pizam and Pokela (1985) studied these residents' perceptions toward the development of casino gambling in the Adams and Hull areas of Massachusetts and found that these residents did not perceive this development as an improvement in their standard of living. Ironically, these residents thought that the development of casino gambling had increased their cost of living. Similarly, Roehl's (1999) research found that only one-third of the survey respondents agreed that the casino gambling establishment made their community a better place to live. Overall, the majority of the investigated respondents stated that they would not recommend the implementation of legalized gambling in other communities (Long, 1996). However, even in the discussion of the negative social impacts of casino gambling, there could be significant determinants (such as the community size and the magnitude of the casino industry) to induce differentiated strengths and extensions of negative social impacts on the host communities (Eadington, 1996) (for example, in comparison with the magnitude of casino gambling between Macau and Singapore).

As indicated by Lee, Kim, and Kang (2003) based on their studies of casino gambling in Korea, the positive socio-cultural impacts would lead to advocacy for the development of casino gambling by residents, but the negative impacts would provoke opposition from residents against the existence of casino gambling.

2.2. Economic impacts

When discussing the economic impacts of tourism, the multiplier process should be the most well-known and frequently applied approach to measure the economic contributions of tourism industry extensively on macroeconomic fields, involving investment (including the flows of income and the numbers of jobs), export, governmental expenditure (such as, constructing public infrastructures and facilities) and taxation revenue, tourist consumption, and so forth. However, the greatest challenge associated with calculating the multiplier process originates from the complexities of collecting the necessary data and defining acceptable numbers of parameters. Therefore, different approaches for measuring the economic impacts of tourism have been developed: the use of an input–output measure, tourism expenditure modeling, the development of satellite accounts, and local impact studies utilizing a number of ad hoc measures (Ryan, 2003, pp. 158–179). Witt, Brooke, and Buckley (2013) indicated that there are three effects of the multiplier process: direct effect (taking place only in the industry that is immediately affected), indirect effect (concerning inter-industry interaction), and induced effect

(relating to changes in household income). Because casino gambling (or the gaming industry itself) belongs to a segment of the tourism industry, the examinations of the economic impacts of casino gambling could be definitely applied in studies related to the economic impacts of tourism.

The fact that opening casino gambling establishments could bring large tax revenues for governments is undoubtedly the best economic benefit that the gaming industry can contribute (Anderson, 2005; Gu & Li, 2009). Kang et al. (2008) suggested that casino gambling could foster local economic developments and bring more beneficial opportunities to commercial activities. Furthermore, some researchers have demonstrated that casino gambling operations generally provide substantial economic benefits through increased employment opportunities (Long, 1996; Pizam & Pokela, 1985). McLain and Maheshwari (2006), who compared the employment opportunities and personal incomes of residents within thirty casino communities in America, declared that increases in job opportunities and incomes are not completely correlated and that only the regions with economic achievements above the national average experienced significant benefits from casino gambling operations. In addition, economic benefits that are generated by casino operations are more obvious in rural areas, where they often lead to greater business developments and wage increases (Garrett, 2004).

Apart from direct economic benefits, the establishment of casinos could also enhance opportunities associated with recreational, leisure, and entertainment activities within these cities. Many casinos offer gaming opportunities, and other forms of entertainment, such as restaurants, bars, pubs, and retail outlets (Buultjens, 2006). However, these related service industries could only be recognized as auxiliary industries compared to casino gambling. For example, Janes and Collison (2004) indicated that guests spend much more time participating in casino gambling than other leisure activities. Room et al. (1999) also found that people spent less money at other entertainment venues after the opening of certain casinos. In other words, the economic improvements due to the establishment of casino gambling could only benefit certain businesses and regions instead of holistic dimensions of the national macro-economy. As indicated by Grinols (1994), casinos in Illinois have not provoked many outstanding improvements on the job opportunities in the state. Garrett (2004) also observed that casino operations do not promise to create local employment if they are established in rural or developing areas, where the workforces may be relatively unskilled, because these casinos are more likely to hire more skilled labor from outside instead of preferentially employing locals. A few studies have even indicated that the opening of a casino did not lead to any improvement or have any positive impact on recreation options (Carmichael et al., 1996; Long, 1996).

The construction of casinos sometimes has negative influences on the sources, revenues, and job opportunities of other industries, and may even destroy their development (Garrett, 2004; Grinols & Mustard, 2006; MacIsaac, 1995; Wan & Kong, 2008). For instance, Truitt (1996) found that riverboat casinos in Illinois did not generate the anticipated tourism and economic growth, because gamblers did not stay in the riverboats long enough to accommodate the hotels' rooms or to eat meals at the local restaurants. The local customers may also be compelled to spend and eat at the casino's facilities (Rephann, Dalton, Stair, & Isserman, 1997). As indicated by the study conducted by Oddo (1997), during the four years after casinos began to operate in Atlantic City, New Jersey, the number of retail businesses declined by one-third, and the number of restaurants was down-sized from 243 to 146.

2.3. Environmental impacts

Several studies have indicated that casino businesses produce positive local environmental outcomes, including the protection of natural environments and ecological resources, the conservation of historical buildings and cultural heritage, the improvement of public transportation, upgrades in electrical facilities, higher medical standards, revitalization of city landscapes, and increases in recreational playgrounds (Lee & Back, 2006; McCool & Martin, 1994; Snaith & Haley, 1999). Nicholas (1998) indicated that the establishment of casinos in Atlantic City, New Jersey, led to the redevelopment of tourism industries, convention facilities, foundational infrastructures, and tourist capacities. In contrast, through a study of the viewpoints of the local residents of Cheju Island of South Korea, Ko and Stewart (2002) found that the levels of residential satisfaction toward the community's environment influenced their attitudes toward casinos. Those respondents who displayed higher levels of satisfaction with the environment usually held more positive attitudes toward casinos. Similar findings were reported by Perdue et al. (1995) in South Dakota and Colorado, as well as by Carmichael et al. (1996) in the Foxwoods Tribe.

Regarding the negative environmental impacts of casino gambling, the following aspects are usually mentioned by researchers: traffic jams, parking difficulty, escalation of trash, soil erosion, poor air quality, decline of scenic beauty, demolition of public infrastructure, and large tourist gatherings (Harrill & Potts, 2003; Ko & Stewart, 2002; Snaith & Haley, 1999; Yoon, Gursoy, & Chen, 2001). For instance, Stokowski (1996) noted that Colorado State Highway 119 exhibited many serious traffic jams within the first month after the opening of a casino in Colorado. Such environmental problems, particularly those caused by a lack of holistic considerations, are the price that the locals have to pay in order for a casino to be opened (Carmichael et al., 1996; Long, 1996).

From the perspectives of the local residents of Macau regarding the association between the negative environmental impacts of and attitudes toward casinos, Vong (2008) acknowledged that the residents of Macau attributed the following negative environmental impacts to the development of local casinos: worsening traffic congestion, air pollution, and overcrowding. Undoubtedly, after facing such negative environmental impacts, Macau residents developed more conservative attitudes toward gambling (Vong, 2009). Some studies have found that the perceptual strength of local residents toward negative environmental impacts is practically reduced after the opening of a commercial casino. For instance, Lee et al. (2003) indicated that the survey respondents appeared to perceive negative environmental impacts as being "less worse" after the casino opened than they did before the casino's opening. Otherwise, the study conducted by Lee, Kang, Long, and Reisinger (2010), who compared the residents' perceptions of casino impacts in South Korea to the perceptions of Colorado residents, found that three factors of the residents' perceptions and support were significantly different in these two study sites. Therefore, it is obvious that the correlation between negative environmental impacts and the residents' attitudes toward the development of casinos would exhibit certain degrees of differentiation in every community depending on the different stages of development, the magnitudes of the local population, and other social characteristics of the local community.

3. Methodology

3.1. Research areas and surveyed subjects

Macau, which is known as the "the Monte Carlo of the Orient", is the leader of the gaming industry in Asia. In 1847, after Portugal

legalized the gaming industry, Macau became the first casino industry in Asia, and this legalization was accompanied by strict laws that painstakingly specified business management and practical operations of the gaming industry, which subsequently played a central role in Asian economies. After Macau was handed over to China in 1999, the gaming and tourism industry was positioned as Macau's core industry. A statistical summary from the UNLV Center for Gaming Research (2014a) showed that the total casino revenues in Macau were 83 billion MOP dollars (\$10.4 billion U.S. dollars) in 2007 and reached a historical high in 2013 of 360 billion MOP dollars (\$45.1 billion U.S. dollars). The fact that approximately 22 million people visit Macau annually makes it the largest development center of tourism-oriented casinos in the world. There are five reasons for why Macau concentrates on casino development: (a) to develop tourism, (b) to create job opportunities, (c) to utilize its advantages in regard to Macau's close proximity to mainland China, (d) to benefit from market competitions and developments, and (e) to leverage its status as the only center for legal casino gambling in China. Therefore, newcomers in the gaming industry strategically employ innovative models that integrate entertainment activities and mainly focus on tourist consumption rather than the revenue that is provided by casino gamblers. Because the gross profit margins of casinos are markedly lower than those of hotels, restaurants, shops, and exhibitions, it would be unwise to attempt to create lucrative business opportunities by simply relying on casino operations (Tseng, 2007).

Although Singapore is known for its strict laws and regulations, its development of tourism industries has attempted to incorporate environmental concerns and social patterns of globalization. To decrease the impacts of global economic crises (such as the serious economic depression in 1985), the Singaporean government formulated a new economic strategy and proposed the legalization of casino industries for the first time in 2002. However, the Prime Minister at that time, Lee Hsien Loong, responded that Singapore must construct casinos because of economic considerations, but that people should not neglect the negative social impacts of casinos (Hung, Yang, & Lee, 2010). However, "by 2005, Lee painfully confronted three major international trends: the Singapore travel industry gradually losing its competitiveness, the repositioning of major cities around the globe, and the fact that the global entertainment economies were becoming multi-dimensional (including casinos). Consequently, Lee was compelled to re-examine his early anti-gambling attitude because 'Singapore cannot afford to lose its national competitiveness'" (Hung et al., 2010, p. 5). After the opening of two integrated resort casinos in Singapore, the total annual revenues of casino gambling were USD\$2.8 billion in 2010 and USD\$4.1 billion in 2013 (UNLV Center for Gaming Research, 2014b).

3.2. The design of questionnaires

The survey that was used in this study refers primarily to the "The Influences toward Macau after the Opening of Casino" questionnaire, which was designed by the Macau Youth Research Association and General Association of Chinese Students in Macau.

The questionnaire is divided into three parts. The first part, which has a total of three questions ("Have you been to a casino for gambling?", "What are your attitudes toward gambling?" and "Would you like to work in the gaming industry?"), inquires about the survey respondents' attitudes toward and participation in gambling. The second part asks about the survey respondents' opinions regarding the influence and impacts of casino gambling openings based on three different aspects, namely social, economic, and environmental, with 12 questions listed for each aspect. This part of the study uses the seven-point Likert scale, in which higher

points refer to higher degrees of recognition. The third part asks about the basic information of the survey respondents and has a total of seven questions that refer to the following aspects: gender, age, degree of education, marital status, duration of residency, occupation, and monthly salary.

Although both Macau and Singapore governments currently regulate that only persons 21 years of age and above are eligible to enter the casino premises, the regulation in Macau was 19 years of age and above before October 2012. Therefore, in the initial design of this study, the target population of survey sampling was set to the Chinese residents in Macau and Singapore that were 19 years of age and above. After finishing the design of this research questionnaire, this research utilized the convenient sampling approach to collect 60 copies of the designed questionnaire from the research subjects as a pilot test in February 2013, and the researchers then used an independent *t*-test to analyze the second part of the scales. The results of the independent *t*-test showed that all of the designed questions reached the levels of significance that were necessary for discrimination. Furthermore, this study applied Cronbach's alpha to measure the result of internal reliability. Cooper and Schindler (2003) suggested that a value of Cronbach's Coefficient alpha greater than .8 indicates that high reliability. Because the values of Cronbach's Coefficient alpha in this study were .886 for Macau and .848 for Singapore, the questionnaire used in this study is internally reliable. To access the validity of the study, the Kaiser–Meyer–Olkin (KMO) was used. The validity of this questionnaire was found to be in the acceptable range, with KMO values of .840 for Macau and .777 for Singapore, which indicate high construct validity (Kaiser, 1974).

3.3. The method of sampling and handing-out questionnaires

Due to limitations associated with time, human resources, and the motivation of survey respondents, this study employed the method of convenience sampling. In consideration of the sampling fairness of information collections, the questionnaires were distributed to every administrative district. The formal questionnaires were handed out during March and April of 2013 in Macau and during May to June of 2013 in Singapore. According to Churchill's formula (Churchill & Surprenant, 1982), 400 copies of the questionnaire are required to reach the necessary size of the sample. Consequently, 480 surveys were distributed in Macau, and 450 copies were handed out in Singapore. After eliminating the inefficient responses, we received a total of 416 useable responses from Macau and 409 useable responses from Singapore.

After analyzing these questionnaires, the study obtained Cronbach's coefficient alpha values of .938 for Macau and .898 for Singapore and KMO values of .858 for Macau and .832 for Singapore. Based on the Cronbach's coefficient alpha and KMO values, this formal questionnaire had relatively high reliability and validity. The collected data were thus found to be useful for further analyses.

3.4. The approach of analyzing the collected data

Based on the research purposes, this study had the following research hypotheses:

Hypothesis 1: Residents from different regions will form different viewpoints toward social, economic, and environmental aspects that are influenced by the development of casino gambling.

Hypothesis 2: The attitudes and behaviors of the surveyed subjects in regard to the establishment of casino gambling will

affect their perspectives concerning these social, economic, and environmental impacts.

Hypothesis 3: Surveyed subjects with social backgrounds will have different perceptions toward social, economic, and environmental impacts that are caused by the development of casino gambling.

Thus, this research used descriptive statistics, an independent *t*-test, a one-way ANOVA, and a correlation analysis in order to objectively examine the three hypotheses.

4. Research results and discussion

4.1. The basic information of the surveyed subjects

First, to display the frequency of participating gaming industries and the basic information of the surveyed respondents, a frequency distribution table was utilized. The results of these descriptive statistics are demonstrated in Tables 1 and 2.

Of the frequency of participation, as shown in Table 1, 12.3% of the surveyed subjects from Macau indicated that they “frequently” went to the casino for gambling, and 14.7% of the subjects from Singapore indicated that they “frequently” went for gambling. In addition, 53.6% of the subjects from Macau and 49.6% of the subjects from Singapore indicated that they “occasionally” went gambling; whereas 34.1% of the subjects from Macau and 35.7% of the subjects from Singapore noted that they “never” went to the casino for gambling. In regard to the subjects' attitudes toward gambling, 5.5% of the subjects from Macau and 7.1% of the subjects from Singapore chose “Welcome,” whereas 28.9% and 38.6% of the subjects, respectively, chose “Not a big deal,” 22.6% and 20.5% of the subjects, respectively, chose “Unwelcome,” and 5.3% and 3.2% of the subjects, respectively, chose “Disgust.” Regarding the question “Would you like to work in the gaming industry?”, 58.4% of the respondents from Macau and 61.9% of the respondents from Singapore answered “Yes,” and 41.6% (Macau) and 38.1% (Singapore) of the subjects said “No”.

According to the results shown above, it is not difficult to note that the attitudes and participation frequencies of the surveyed residents from Macau and Singapore toward the gaming industry are strong: over 60% of the surveyed residents (65.9% from Macau and 64.3% from Singapore) have been to casinos for gambling. Regarding their attitudes toward gambling, approximately one-third chose “Welcome” or “(Acceptable),” one-third chose “Not a big deal,” and one-third chose “Unwelcome” or “Disgust.” However, lower percentages of negative attitudes were found (27.9% of the subjects from Macau and 23.7% of the subjects from Singapore responded negatively). Finally, the percentage of survey

Table 1
Attitudes and participation of survey responders in regard to the gaming industry.

Question	Item	Macau		Singapore	
		Persons	Percent	Persons	Percent
Have you been to a casino for gambling?	Frequently	51	12.3	60	14.7
	Occasionally	223	53.6	203	49.6
	Never	142	34.1	146	35.7
What are your attitudes toward gambling?	Welcome	23	5.5	29	7.1
	Acceptable	120	28.9	158	38.6
	Not a big deal	157	37.7	125	30.6
	Unwelcome	94	22.6	84	20.5
	Disgust	22	5.3	13	3.2
Would you like to work in the gaming industries?	Yes	243	58.4	253	61.9
	No	173	41.6	156	38.1

Table 2
Respondents' social backgrounds.

Items	Choices	Macau		Singapore	
		Persons	Percent	Persons	Percent
Gender	Male	225	54.1	224	54.8
	Female	191	45.9	185	45.2
Age	19–24 years old	87	20.9	73	17.9
	25–35 years old	201	48.3	252	61.6
	36–49 years old	63	15.2	68	16.6
	Over 50 years old	65	15.6	16	3.9
Educational background	Senior high school or under	196	47.1	141	34.5
	College	99	23.8	173	42.3
	Bachelor	115	27.6	89	21.7
	Master or above	6	1.5	6	1.5
Marital status	Single	212	51.0	247	60.4
	Married	119	28.6	110	26.9
Duration of residence	Married, with children	85	20.4	52	12.7
	Less than 1 year	7	1.7	10	2.4
	More than 1 year and less than 3 years	38	9.1	73	17.9
	More than 3 years and less than 6 years	39	9.4	74	18.1
	More than 6 years and less than 10 years	63	15.1	87	21.3
	More than 10 years	269	64.7	165	40.3
Occupation	Student	43	10.3	46	11.3
	Professional	34	8.2	31	7.6
	Public official	60	14.4	68	16.6
	Manufacturing	72	17.3	86	21.0
	Service industry	91	21.9	101	24.7
	Gaming-related industry	85	20.4	50	12.2
	Other	31	7.5	27	6.6
Monthly income (MOP\$/SGD\$)	7000/1400 or less	94	22.6	102	24.9
	7001–15,000/1401–2500	180	43.3	237	58.0
	15,001–30,000/2501–4000	129	31.0	66	16.1
	30,001/4001 or more	13	3.1	4	1.0

respondents who wished to work for the gaming industries was approximately 60% (58.4% for Macau and 60.9% for Singapore).

Luke (2011) indicated that running a gambling business has been a major enterprise in many Chinese cities in the period from the Song dynasty (960–1279) to the Qing dynasty (1644–1911). In fact, even today, various legal or illegal gambling activities continue to spread in Chinese societies. Thus, the residents' attitudes toward gambling in Chinese societies are undoubtedly worth extensive examination because the Chinese population is considerable in the world. An important point is that many studies have demonstrated that the establishment of casinos frequently creates certain attractiveness for the local residents. Based on the investigation conducted by Smith and Hinch's (1996), Canada's casinos are not major selling points that attract tourists because the majority of casino visitors are local residents. However, casino operations often cause a radical increase in the local gambling population (Grinols, 1995; Truitt, 1996) and may even trigger an upsurge in bankruptcy rates (Nichols, Stitt, & Giacomassi, 2000). Because these negative impacts of gambling businesses have been clearly observed in many places, one of the key points of this study is whether the attitudes of local residents who participate in gaming industries influence their perspectives regarding the impact of casino gambling operations.

As shown in Table 2, 54.1% of the survey respondents from Macau and 54.8% of the respondents from Singapore are male, and female subjects comprise 45.9% (Macau) and 45.2% (Singapore) of the respondents. The majority of the respondents are centrally distributed around the age range of 25–35 years (48.3% for Macau and 61.6% for Singapore). The analysis of the respondents' educational backgrounds showed that 47.1% of the respondents from Macau and 34.5% of the respondents from Singapore reached the

level of "Senior high school or under"; 23.8% and 42.3% of the subjects, respectively, reached the level of "College"; 27.6% and 21.7% of the subjects, respectively, achieved the level of "Bachelor"; and 1.5% and 1.5% of the respondents, respectively, completed the level of "Master or above." Regarding marital status, the majority of the survey respondents stated a marital status of "Single" (51.0% from Macau and 60.4% from Singapore). In the section on occupations, the "Service industry" was found to be the leading occupation of the survey respondents (21.9% from Macau and 24.7% from Singapore). Finally, the analysis of the "Monthly income" variable showed that the respondents with a monthly income of MOP\$7000–15,000 (approximately USD\$860–1840) form the largest group of representatives from Macau (43.3%), whereas the respondents who earn SGD\$1400–2500 (approximately USD\$1120–2000) monthly make up the largest group of representatives from Singapore (58.0%).

For local residents, the developments of casino gambling can obviously produce positive benefits on the local economy, particularly increases in employment opportunities and in the levels of job payrolls. As indicated in their studies, Garrett (2004) and Vong (2008) found that the majority of residents in Macau believe that casino gambling has improved their regional economies and increased the opportunities for employment. As shown in Table 2, the gaming industry influenced the residents in Macau and Singapore: more than 20% (in Macau) and 10% (in Singapore) of the survey respondents work in a gaming-related business. According to the analytic report titled "Tears behind the Diamond: A study on Income Inequality in Macau", the research group UMBERET from University of Macau described:

The vibrant gaming industry exerts a positive ripple effect on the stimulus of other industries, increasing the earnings of industries such as hotels and restaurants. The large demand of workers and the high salaries provided by casinos has attracted many people toward working in this industry. In 2008, more than 95,000 people worked in the gaming industry. Many employees who previously had low earnings can currently earn a monthly wage greater than MOP\$12,000 (approximately USD\$1470). The growth of the gaming industry has broadened the size of the middle income class.

UMBERET, 2008, *Tears behind the diamond: a study on income inequality in Macau*, p. 23

4.2. The viewpoints of residents toward the influence of casino establishments

Based on different social, economic, and environmental aspects, this research study utilized descriptive statistics to calculate the mean and standard deviation of the answers to each question in the collected survey questionnaires. Then, to explore whether the residents of Macau and Singapore have different opinions toward these social, economic, and environmental influences, this study first ranked the order of influences and then used an independent t-test. The calculated outcomes are demonstrated in Tables 3–5.

The analysis of the social aspects of Macau and Singapore, as shown in Table 3, revealed two options ranked within the top three (Soc5 and Soc6) and two additional options ranked within the bottom three (Soc9 and Soc10). This finding indicates that the survey respondents from these two regions, who are Chinese, commonly believe that casino gambling establishments promote popularity and also stimulate an increase in the number of foreign workers. The issues of criminality and prostitution were not obviously mentioned by the respondents in regard to the operations of casino gambling. In fact, Macau is internationally famous for its

Table 3
The influences of social impacts caused by casino gambling.

Items of social conditions	Mean	SD	No.	Mean	SD	No.	t-Value
The overall image is better (Soc1)	5.03	1.19	4	4.44	1.11	3	7.404**
The sense of superiority of residents is rising (Soc2)	4.75	1.40	6	4.15	1.20	6	6.554**
The social benefit is better (Soc3)	5.05	1.17	3	4.25	.99	5	10.639**
The efficiency of government management is improved (Soc4)	4.50	1.28	8	4.30	1.01	4	2.519*
Prestige is promoted (Soc5)	5.55	1.12	2	4.93	1.19	1	7.699**
There are more foreign workers (Soc6)	5.60	1.53	1	4.75	1.42	2	8.277**
Public security is becoming worse (Soc7)	4.31	1.98	10	3.92	1.25	8	3.396**
There are more problem gamblers (Soc8)	4.59	1.96	7	3.96	1.41	7	5.295**
There is an increase in the number of criminals (Soc9)	4.23	1.95	11	3.71	1.20	11	4.556**
Prostitution is increasing (Soc10)	4.16	1.99	12	3.67	1.29	12	4.242**
Work time is unfixed (Soc11)	4.76	1.96	5	3.86	1.41	9	7.592**
Social values are distorted (Soc12)	4.44	1.96	9	3.80	1.34	10	5.492**

ps. * $p < .05$; ** $p < .01$.

gaming industries, and Singapore is gradually building its fame after recently adopting casino gambling. As demonstrated by the conclusion of Wan's (2012) study, gaming industries that are infused in foreign investments will not only bring multi-patterned occupations but also positively promote the international images of the city itself (e.g., Soc5 and Soc 1). However, because Macau and Singapore have recently concentrated on developing the MICE (Meeting, Incentives, Conferencing, Exhibitions) industry, it is reasonable for these two regions to import foreign workers, who are needed due to the increasing demands of human resources and to involve the more complicated policies of foreign labor markets

Table 4
The influences of the economic impacts of the casino gambling.

Items of economic impacts	Mean	SD	No.	Mean	SD	No.	t-Value
Increase of residents' income (Eco1)	5.11	1.40	8	4.12	1.27	10	10.537**
Rise in local employment rate (Eco2)	5.26	1.29	5	4.39	1.30	7	9.664**
Increase in visitors' consumption (Eco3)	5.40	1.21	3	4.71	1.28	2	7.908**
The prices of consuming goods go up (Eco4)	5.23	1.31	7	4.45	1.21	6	8.869**
The competition among enterprises is enhanced (Eco5)	5.01	1.32	9	4.38	1.30	8	6.892**
The development of related industries is driven (Eco6)	5.25	1.13	6	4.69	1.16	3	7.004**
The price of real estate is rising (Eco7)	5.48	1.75	1	4.63	1.59	5	7.282**
Small and medium enterprises are gradually bankrupted (Eco8)	3.83	1.85	12	3.60	1.38	12	1.984*
The job options for young people are narrowed (Eco9)	4.42	1.93	11	3.84	1.39	11	4.953**
Increase of commodity prices (Eco10)	5.32	1.71	4	4.66	1.46	4	6.000**
There is a shortage of materials and services (Eco11)	4.57	1.92	10	4.38	1.36	9	1.669
Inflation is getting worse (Eco12)	5.47	1.66	2	4.79	1.41	1	6.331**

ps. * $p < .05$; ** $p < .01$.**Table 5**
The influences of environmental impacts of casino gambling.

Items of environmental impacts	Mean	SD	No.	Mean	SD	No.	t-Value
The infrastructure is being completed (Env1)	5.13	1.25	2	4.89	1.19	3	2.855**
Public transportation is more convenient (Env2)	5.07	1.36	4	5.10	1.09	1	-.357
The travel spots are being increased (Env3)	5.13	1.08	1	4.94	1.01	2	2.728**
The night scenes are becoming attractive (Env4)	5.09	1.14	3	4.68	1.16	4	5.209**
The noise pollution is getting worse (Env5)	4.71	1.93	8	4.49	1.39	6	1.904
The air quality is being lowered (Env6)	4.85	1.80	7	4.32	1.28	8	4.821**
The expansion of casinos harasses the residents (Env7)	4.30	1.96	11	4.04	1.32	9	2.163*
Traffic jams in downtown are getting worse (Env8)	5.04	1.81	5	4.52	1.30	5	4.681**
Casinos are causing overloading within public facilities (Env9)	4.97	1.86	6	4.38	1.36	7	5.210**
The environment is polluted (Env10)	4.41	1.97	10	4.03	1.28	10	3.250**
The trash is becoming greater (Env11)	4.51	2.00	9	3.95	1.31	11	4.747**
The number of abandoned pets is getting higher (Env12)	3.80	1.71	12	3.57	1.27	12	2.134*

ps. * $p < .05$; ** $p < .01$.

(Ajis et al., 2010; Chou, 2005). Thus, the correlation between the growth of foreign workers and the establishment of casino gambling still needs to be clarified.

Lo (2005) and Vong (2004) suggested that organized crime in Macau decreased after the liberalization of casino licensing in 2002. However, Wan (2012) used a different approach, in which he interviewed seventeen community leaders and found that 41% of the interviewed leaders believed that the increase in crime rates was due to the development of the casino gambling sector. In contrast, Wan (2012) also pointed out that the statistical data of the Judiciary Police of the Macau SAR Government in 2010 revealed that Macau's criminal cases from 2002 to 2008 had increased by 52.5% (9088 cases in 2002 to 13,864 cases in 2008) and that the number of gambling-related crimes increased by 37.8% (from 1093 in 2005 to 1506 in 2008). Therefore, even though as displayed in Table 3, the survey respondents from Macau and Singapore both hold neutral attitudes (with means of 4.23 and 3.71, respectively) toward the item "There is an increase in the number of criminals (Soc9)", which does not mean that criminal problems and the establishment of casino gambling are not correlated. The possible correlation between crimes and casino gambling remains an important social issue for governmental officials (for instance, the worry for public security in Soc7).

The survey respondents from Macau and Singapore also affirmed a standard upsurge in social welfare (ranking 3rd and 5th, respectively). In fact, due to copious revenues from governmental taxation, the Macau government has given every permanent resident approximately MOP\$5000–6000 [nearly equally to \$625–750 U.S. Dollars] and every temporary resident approximately MOP\$3000–3600 [\$375–450 U.S. Dollars] each year since 2008 and has also aided the following social welfares: the time-span of free education from 10 years to 15 years, free medical care, and subsidized bus transportation for those over the age of 65 years (Wan, 2012). After the legalization of casino licensing from 2005 to 2010, Singapore opened two gambling casinos that required a very short period of administrative procedures and processes (Resorts World Sentosa and Marina Bay Sands). Such high administrative efficiency earns the admiration of local residents (see Soc4, which ranks 4th).

In regard to the report “Institute for the Study of Commercial Gaming,” Wan et al. (2011) indicated that the percentage of pathological gamblers in Macau increased from 4.3% in 2003 to 6.0% in 2007, but this problem is less acute in Hong Kong and Singapore than it is in Macau. As observed from Soc8 in Table 3, even though the selected item “There are more problem gamblers” is ranked seventh in both places, the mean of the responses to this item from Macau residents was found to be 4.59, which is slightly higher than the mean of 3.96 found from the responses of the Singapore residents. The analytical findings for Soc8 could be reasonably treated as a positive echo of the above-mentioned investigation conducted by Wan, Li, and Kong in 2011. The difference of problem-gambler rates among Macau, Hong Kong, and Singapore may be partially attributed to the different managerial systems of social controls. For example, related social institutes in Singapore develop the following risk-management systems to reduce the increase in problem-gamblers: casino exclusion system, casino visit limit system, family and community support system, legal and financial advisory service, and so forth (Sing, 2012). Otherwise, casino business in Singapore only occupies very small percentages from the entire operation of the so-called “integrated resort casino”, indicating that its development is clearly distinct from traditional casino and casino–hotel complexes in Macau and Hong Kong (Uy, 2014).

Of course, problem gamblers could be concealed within every social class, and they may not be easy for ordinary people, who are not professionally trained to diagnose this condition, to recognize. Thus, regardless of whether the problem gamblers have gradually increased, after the establishment of casino gambling in Singapore, it is a worthy topic to which governmental offices pay a lot of attention. Moreover, Wan (2012) mentioned that the rise of materialism, the sentimental depression of learning, the indifference within family relationships, and the lack of parent–child care were the most observed social problems caused by the operations of casino gambling. Although the problematic issues of social impact discussed by Wan were not completely surveyed in this study, two other social problems (“Work time is unfixed” and “Social values are distorted”), which resulted in Soc11 and Soc12, as shown in Table 3, could more or less overlap, particularly from the perspective of “Social values are distorted.”

In terms of economic concerns, as demonstrated in Table 4, there are two items that were similarly ranked in the top three (Eco3 and Eco12) and two items that were in the bottom three (Eco8 and Eco9) for both places. This finding indicates that the survey respondents from Macau and Singapore, who are mostly Chinese, commonly consider that the operations of casino gambling trigger inflation and stimulate consumption but do not believe that these operations would cause bankruptcy for small and medium enterprises and narrow the job opportunities for young people. This type of research finding was also similarly observed by other scholars: the study conducted by Wan (2012) indicated that inflation, the rising of rent prices, the increase in costs, and other negative impacts that are triggered by the development of casino gambling have already been identified. In addition, Vong (2008) also suggested that the majority of residents in Macau believe that casino gambling and the booming economy has led to a high cost of living, inflation, and increases in commercial properties. Therefore, it is not surprising that Eco7 (ranking as 1st), Eco10 (4th in ranking), and Eco12 (ranking as 2nd) are the economic influences that were identified by most of the survey respondents in Macau. Although Eco7, Eco10, and Eco12 are ranked in Singapore as 5th, 4th, and 1st, their potential economic impacts should not be neglected.

In general, when every government considers whether the country needs to develop casino gambling, governmental

revenues from financial taxations and the growth of job openings are always primary and significant factors in the decision-making process. Thus, the increase in the consumption tax that is levied from visitors becomes an inevitable economic fact that survey respondents from Macau and Singapore consistently notice (see Eco3). Surprisingly, even though visitors' consumptions have distinctly increased, the survey respondents in this study do not simultaneously experience the rising prices of consuming goods (Eco4), personal incomes (Eco1), and employment rates (Eco2) that are usually driven by the establishment of casino gambling. The identification of this result indicates that further exploration of whether the operations of casino gambling could only benefit certain particular industries or target groups may be important.

Wan (2012) indicated that the development of casino gambling attracts the investment of foreign capital and leads to the expansion of job opportunities and the diversification of employment types, whose economic phenomena have led to difficulties in recruiting new employees in certain companies. When facing a choice of occupation or future career, young people prefer to work for casino-related job vacancies, which cause a shortage of human resources for most non-casino-related companies. Therefore, it is easy to realize why survey respondents from Macau and Singapore did not experience anxiety regarding the item “The job options for young people are narrowed” (Eco9, ranked 11th). Many researchers also provided similar points of discussion: the founding of casino gambling is easily shown to “strangle” the developmental spaces of other industries (Garrett, 2004; Grinols & Mustard, 2006; MacIsaac, 1995; Wan & Kong, 2008). These viewpoints are not reflected in the responses of the subjects surveyed in this study. It may be worth further investigation to determine whether the subjects sampled in this research represent the general population; they may instead be professional scholars or business owners who have professional knowledge, so are sensitive to experience and grasp the holistic situation regarding economic prosperities. However, the survey respondents from Singapore agreed that the opening of casino gambling spurred the progress of surrounding industries (Eco6, ranked 3rd). Because Singapore only initiated its casino gambling within recent years and because their constructional processes did need various types of occupational personnel, the survey respondents may have seen the progress of the surrounding industries.

In reference to the environmental impacts, as shown in Table 5, there were also two items that were similarly ranked in the top three (Env1 and Env3) and two items that were similarly ranked in the bottom three (Env10 and Env12) by the responders from Macau and Singapore. This outcome indicates that the survey respondents from Macau and Singapore, who are mostly Chinese, commonly recognize that the establishment of casino gambling enhances travel spots and infrastructures but do not think that it causes serious environmental pollutions and leads to more pets being abandoned. Practically speaking, the governmental bureau of environmental protection in Macau (Direcção dos Serviços de Protecção Ambiental, DSPA, in Portuguese) has continuously invested a considerable budget on the public expenditure for environmental protections and has been consistently executing a series of plans for environmental protections (DSPA, 2014). Similar to the construction of infrastructure, the brilliant lighting effects of casinos have created very pleasing atmospheres for nightlife scenes, which is why the local residents of Macau and Singapore give Env1–Env4 such high rankings.

Some scholars have suggested that, even though some common people have more positive attitudes toward the

environmental dimension, most community leaders do not. Based on interviews with significant community leaders in Macau, Wan (2012) indicated that the following issues are commonly considered by community leaders in Macau to be crucially negative environmental impacts: loud noise (e.g., Env5), air pollution (e.g., Env6), traffic jams (e.g., Env8), and over-crowding (e.g., Env9). However, the survey respondents in this study did not demonstrate radical threats of environmental impacts. The interviewed leaders even predicted that the lack of systematic urban planning would cause urban landscapes to be overtaken by real estate and gaming-interested casinos (Wan, 2012). In contrast, the investigation conducted by the Land, Public Works and Transport Bureau (2008) concluded that the green and leisure-zone areas on the Macau Peninsula had declined from 1.17 km² in 2003 to .96 km² in 2008 and that the green/leisure areas per capita had shrunk from 13.5 m² in 2002 to 12.0 m² in 2008. Therefore, farsighted and long-term urban planning is definitely necessary to lessen the above-mentioned negative environmental impacts.

Both Macau and Singapore are highly developed cities and thus have strict regulations in regard to environmental pollution (e.g., Env10), waste disposal (e.g., Env11), and pet feedings (e.g., Env12). As presented in Table 5, the means of Env10, Env11, and Env12 are apparently lower than the means found for the other items. The survey respondents within the two regions have not confronted these negative environmental impacts, and this finding indirectly confirms the positive attitudes toward the local government concerning environmental pollution. In all fairness, although the origin of these environmental problems has not been directly correlated with the establishment of casino gambling, these related issues still belong to the same parts of the overall environmental system, and related units of the local government need to pay close attention to these issues as they arise.

Although the survey respondents in Macau and in Singapore hold similar viewpoints in regard to the top three ranked issues and the bottom three ranked issues, the different correlation strengths among them could still be further analyzed and discussed through different statistical approaches. Through the use of independent *t*-tests, as shown in Tables 3–5, we found that all of the chosen items with the exception of items Eco11, Env2, and Env5 exhibited significant differences. The strength of the residents' attitudes in Macau was found to be noticeably higher than the residents' attitude strength in Singapore. Based on these analytical outcomes, this research study demonstrates that the long-term development of casinos in Macau has successfully established deep-rooted attachments to these casinos in the local residents, who are thus able to express what they feel more clearly. By examining the residents' attitudes and reactions toward the developmental stages of the tourism industry, Doxey constructed the so-called "irritation index model" to conceptualize the mutual relationship between the temporal stages of tourism development and the psychological strengths of the community residents toward visitors. The meaningful implication of Doxey's "irritation index model" is that the residents' attitudes toward tourism impacts would be inevitably influenced by their perceptual changes due to experience (Doxey, 1975). Similarly, the residents' attitudes toward developments in casino gambling will be definitely changed and more pronounced at different experiential stages of gaming industry. The operations of casino gambling in Singapore remain situated in their initial stages, and thus, the perceptions of residents toward its impacts are relatively more conservative. Strictly speaking, the viewpoints of local residents in Macau and Singapore toward the social, economic, and environmental impacts related to casino gambling still show some differences; thus, hypothesis 1 of this study is reasonably supported.

4.3. The discussion of the residents' viewpoints on the correlations between gambling behaviors and attitudes and the influences of casino gambling establishments

Compared to straightforward discussions on the positive and negative influences of casino gambling establishments, it appears that previous studies have rarely explored the viewpoints of the investigated subjects regarding the correlations between (1) gambling behaviors and attitudes and (2) the influence of casino gambling establishments. For this reason, the second main purpose of this study was to examine whether the residents' behaviors and attitudes toward the act of "gambling" is correlated with their viewpoints on the influence of casino gambling.

By examining and analyzing the strength of the residents' attitudinal differences, the scale of semantic differentials, which is perhaps the most commonly used multi-item attitude measure, was analyzed. The original work of semantic differential was definitely pinpointed to the study of the meaning of the investigated concepts. Using a long list of adjective pairs and a magnitude of concepts to understand the correlated relationships of the investigated conceptions among the survey respondents, three underlying dimensions or factors were analytically categorized: *evaluation* (e.g., "good-bad" or "like-dislike"), *potency* (e.g., "strong-weak" or "high-low"), and *activity* (e.g., "fast-slow"). The method of semantic differential that was popularly designed to measure attitude (instead of meaning in general) is based exclusively on the loaded items of the evaluation dimension (Bohner & Wänke, 2002, pp. 27–28). Because most related studies divide the impacts of casino gambling developments into positive and negative sides, this research study used the concept of semantics and equally weighed the questionnaire questions to simplify the following dimensions: Soc1–Soc5 are considered positive social impacts, Soc6–Soc12 are considered negative social impacts, Eco1–Eco6 are considered positive economic impacts, Eco7–Eco12 are considered negative economic impacts, Env1–Env4 are considered positive environmental impacts, and Env5–Env12 are considered negative environmental impacts. These new transformed variables from the items shown in Tables 3–5 and the content in Table 1 belong to the semantic scale. Thus, this study utilized Spearman's rank correlation to examine their degrees of association. The outcome of this analysis is displayed in Table 6.

Table 6 shows that, from the viewpoint of Macau residents, only "Attitudes toward gambling" and "Negative social impacts" appear to be significant in the correlation results. This finding indicates that the residents of Macau who dislike the act of "gambling" tend to agree that gambling will bring negative social impacts. In fact, the mutual relationship between Macau's developments and gaming industries is close and has been historically formulated into "casinopolitanism" (Luke, 2011), which leads to casino industries becoming the significant medium of socialization in the residents' everyday lives in Macau. Macau's residents have more opportunities in casino gambling and have been in contact with casino gambling for a longer time, which has led to them seeing the impacts of casinos as a normal part of their everyday lives. However, the act of "gambling" does not only relate to personal preferences and moral judgments but also usually relates to broader social problems (for instance, marriage breakdowns, mafia ownership, and child abuse). It is not difficult to realize why people who dislike the act of (pathological) gambling would be able to recognize that the establishment of casino gambling may bring negative social impacts.

In contrast, Singapore was originally an anti-gambling country but legalized the establishment of casino gambling in 2005 and had its first casino gambling development in 2010. Thus, Singapore's residents have had less of a chance and a shorter period of time to

Table 6

Analysis of the correlation between residents' behaviors and attitudes toward gambling and their viewpoints on the influence of casino gambling.

Influence of casino establishments	Behaviors & attitudes toward gambling					
	Macau			Singapore		
	Spearman's rho coefficient			Spearman's rho coefficient		
	Did you gamble in casinos	What do you think of gambling	Do you like to work for gaming industries	Did you gamble in casinos	What do you think of gambling	Do you like to work for gaming industries
Positive social impacts	-.017	-.079	-.067	.053	-.014	-.018
Negative social impacts	.012	.099*	.076	-.006	.171**	.150**
Positive economic impacts	.038	.004	-.029	.220**	.083	-.087
Negative economic impacts	.015	-.073	-.031	.094	.179**	-.045
Positive environmental impacts	.024	-.036	-.035	.226**	.095	-.032
Negative environmental impacts	-.032	-.017	.020	.004	.144**	-.026

ps - * $p < .05$; ** $p < .01$.

become familiar with casino gambling. As shown in Table 6, the answers provided by Singapore residents to the question “Did you gamble in casinos?” is clearly correlated with “positive economic impacts” and “positive environmental impacts”. These correlations indicate that people who never or seldom visit casinos for gambling slightly agree that the operations of casino gambling contribute to “positive economic impacts” and “positive environmental impacts”. Each country primarily launches casino gambling due to economic considerations, and the positive economic effects of casino gambling are more easily experienced by casual gamblers within a short-term period. However, for the people who frequently visit casinos for gambling, the “economic impact” that they mention may be purely related to their personal “winning-losing problems”, and it may be more difficult for these individuals to express their feelings due to this “economic impact.” Regarding positive environmental impacts, those respondents who always linger in the casinos spend most of their time focusing on the gambling tables and thus rarely become aware of changes in the outside environments. The variable “The attitudes toward gambling” demonstrates significant correlations with all of the “negative impact” dimensions. This result indicates that those who dislike the act of gambling believe that the creation of casino gambling would cause only negative impacts, even though this belief could be purely founded upon the perception of moral values instead of an objective rational judgment. The item “Do you like to work in gaming industries?” was only correlated with the variable “negative social impacts”. Those who do not like to work for the gaming industries believe that the operations of casino gambling will cause negative social impacts, but this consideration could also originate from the moral standard of social values.

In sum, Macau's and Singapore's residents exhibit clear differences in regard to the correlations between their “behaviors and attitudes toward gambling” and “their viewpoints toward the influences of casino gambling establishments.” Therefore, hypothesis two of this study is partially supported.

4.4. The analysis of differences between various attributes of residents' backgrounds and their perspectives regarding the influence of casino gambling establishments

The third purpose of this study was to explore whether the differences in the residents' standpoints toward the influence of casino gambling establishment is due to differences in their social backgrounds. Thus, this study categorized the influence of casino

establishments into six types and utilized the items listed in Table 2 to determine the social background of each resident. To analyze the relationships between the examined variables, this research study used an independent *t*-test for the analysis of the variable “Gender”, a Chi-square test for the analysis of the item “Occupation”, and ANOVA for the analysis of the items “Age”, “Education”, “Marital status”, “Time-span of living here” and “Monthly income”. The outcomes of these analyses are displayed in Tables 7–9.

As shown in Table 7, the female residents of Macau believe that the development of casino gambling will contribute to “positive economic impacts” more than the male residents. Conversely, the female residents of Singapore more strongly believe that the establishment of casino gambling will cause “negative social impacts” than the male residents. Beginning in the 1930s, the developmental history of casino gambling is more than eighty years old and has already earned Macau its famous title of “Monte Carlo of the Orient”. Therefore, the gaming industries in Macau have created many job opportunities for its residents. In general, the occupational attributes of gaming industries (particularly in regard to casino gambling and its related hospitality) can be primarily categorized into the “service industry”, which provides many job vacancies for “emotional labor” and “secondary labor”. From the perspective of sociological functionalism, the development of a “gendered division of labor” originates from the social evolutions regarding the functional contributions of males and females: males take the instrumental roles, and females take the emotional ones in

Table 7

Differences in residents' standpoints toward the influence of casino gambling due to gender and occupation.

Influence from casino	Area			
	Macau	Singapore	Macau	Singapore
	Gender		Occupation	
	<i>t</i> Value		Chi-square value	
Positive social impacts	-1.723	-.341	207.506**	216.321**
Negative social impacts	-1.618	-2.429*	293.910**	284.364**
Positive economic impacts	-2.127*	-1.526	218.996**	343.968**
Negative economic impacts	.344	-1.553	260.961**	314.369**
Positive environmental impacts	-.075	.916	125.746	219.904**
Negative environmental impacts	.341	-1.289	288.412	353.222**

ps - * $p < .05$; ** $p < .01$.

Table 8

Gender distributions in different occupational types in gaming industry in the 2nd Quarter of 2013 and 2014 in Macau.

Principal occupation	Employees in the 2nd quarter, 2013			Employees in the 2nd quarter, 2014		
	Male	Female	Total	Male	Female	Total
Directors and managers	1144 (60.0%)	763 (40.0%)	1907 (100.0%)	1272 (59.9%)	853 (40.1%)	2125 (100.0%)
Technicians and associate professionals	1345 (55.7%)	1070 (44.3%)	2415 (100.0%)	1302 (54.9%)	1071 (45.1%)	2373 (100.0%)
Clerks	16,639 (41.1%)	23,890 (58.9%)	40,529 (100.0%)	16,780 (39.3%)	25,969 (60.7%)	42,749 (100.0%)
Dealers	9326 (38.8%)	14,705 (61.2%)	24,031 (100.0%)	9283 (36.1%)	16,444 (63.9%)	25,727 (100.0%)
Service and sales workers	4521 (63.9%)	2551 (36.1%)	7072 (100.0%)	4270 (63.3%)	2473 (36.7%)	6743 (100.0%)
Total employees in gaming industry	32,975 (43.4%)	42,979 (56.6%)	75,954 (100.0%)	32,907 (41.3%)	46,810 (58.7%)	79,717 (100.0%)

Statistical source from *Statistics and Census Service, 2014a*.

every society (Andersen & Taylor, 2008). Therefore, the labor market of the service industry is definitely dominated by females. This theoretical examination of the social phenomenon may be rationally applied in this study to explain why female residents in Macau hold more positive attitudes toward the establishment of casino gambling. These job opportunities originating from the gambling industry may provide some female residents with personal economic independence and considerable financial incomes. For instance, according to the statistical data shown in Table 8, the numbers of female employees in the gaming industry in the 2nd quarter of 2013 and 2014 were 42,979 and 46,810, respectively, which represent approximately 56.6% and 58.7% of the total employees in the gaming industry in Macau, but the crucial and respectable positions of managerial and professional strata remain dominated by male employees. However, the gaming industry in Macau practically provides considerable opportunities for the female population to develop careers and receive financial support.

Unlike the extensive scope and amount of gaming industries in Macau, Singapore developed its industry of casino gambling within a very short period of time, which means that there are less job opportunities that have resulted in positive economic impacts in Singapore compared with Macau. However, as in most Chinese societies, the related sayings of “ten bet, nine lost” and “gambling will break a family and lead to the violent death of people” reflect the moral implications that the act of gambling may not only damage people's lives but also ruin whole families. After all, the traditional roles of women as housekeepers and child-minders are recognized as the most significant factor to interfere or discourage Singaporean women to carelessly pursue either full-time positions or higher managerial statuses (Lee, 1999). In other words, the social institution of family plays a very important role in the mind of Singaporean women, which may be why female residents in Singapore exhibit more negative attitudes toward casino gambling.

Regarding the facet of “Occupation”, all of the residents demonstrate differences in all of the positive and negative impacts of the social, economic, and environmental spheres (except Macau's residents demonstrate no noticeable differences in their attitudes toward “environmental impacts”). In their study of the influence of casino gambling developments on different occupations, Kong and Wan (2011) concluded that there are definite, different advantages and disadvantages in regard to the influence that the gaming industry has on various occupations. From the viewpoint of sociology, occupations represent the important social indicators that identify a person's hierarchical social status and reputation. Additionally, most people usually recognize people's social identities and group identifications due to the concept of “in-groups” and “out-groups” (Andersen & Taylor, 2008); thus, residents who work for the gaming industry are easily able to create “in-groups” and to commonly defend themselves against negative criticisms regarding the negative impacts of casino gambling.

Therefore, as this research study implies, the fact that residents with various occupations develop different perceptions toward the impacts of casino gambling establishments is quite reasonable. In regard to their examination of why Macau residents with different occupations do not have significantly different perceptions toward “environmental impacts”, the researchers of this study suggest that, because the gaming industry has been rooted in Macau for a long time, all of its main infrastructures and construction have been completed, and most residents have accommodated to their surrounding environments. In contrast, because the development of casino gambling in Singapore recently took place, many residents, regardless of their occupation, appreciate that the positive impacts of casino gambling are related to leisure/recreational infrastructures and magnificent night scenery (see its rank in Table 5) and suffer from the negative impacts of casino gambling related to pollution and traffic inconvenience during its construction period.

The results shown in Tables 9 and 10 indicate that Macau's and Singapore's residents with differences in “Age” and “Marital status” hold completely opposite perceptions toward the impacts of casino gambling operations. In terms of “Educational background” and “Monthly income”, the residents of these two areas express similar viewpoints toward the impacts of casino gambling. In regard to “Residence time”, the outcome of the statistical analysis shows there are slight differences between the residents from these two areas.

The majority of the population in both Macau and Singapore is Chinese (95% of Macau's resident population and 74.2% of Singapore's resident population); thus, the survey respondents in this study should share similar values, morals, and cultural customs toward the issues of “gambling” and “casino gambling.” From the perspective of sociology, there are four major cultural components: value, norm, symbol, and language. Among these four components, value is definitely recognized as the central foundation of culture because values significantly transmit the important ideas and people with similar ethnic characteristics collectively share similar values and behavioral norms that are socialized by the related institutions of family, school, and religion (Stolley, 2005, pp. 45–49). Therefore, Confucianism, the traditional belief of values and behavioral norms in Chinese society, has played a significant and influential role in the cultural foundation of Macau and Singapore (Khan, 2001, p. 21; Taormina, 2009). Based on a review of some studies and statistical reports regarding the behaviors and attitudes of Chinese residents in Macau and Singapore (Fong & Ozorio, 2005; National Council on Problem Gambling, 2007), it can be noted that there are certain traits that were collectively and similarly represented: “treating social gambling as a leisure activity”, “when gambling, not be afraid to take risks”, and “it is okay to gamble once in a while, as long as it is not done excessively”. However, the geographical locations of Singapore and Macau (based on how close they are to Mainland China) appear to cause marked differences in regard to the attitudes and behaviors of Chinese residents toward casino gambling.

Table 9

Perceptual differences of Macau's residents with diverse social backgrounds toward the impacts of casino gambling.

Impacts of casino gambling	Area				
	Macau				
	Items				
	Age	Educational background	Marital status	Residence time	Monthly income
	F value				
Positive social impacts	5.921**	1.862	.460	4.178**	.573
Negative social impacts	8.940**	1.073	2.742	6.955**	3.164*
Positive economic impacts	2.590	5.261**	.656	7.040**	4.122**
Negative economic impacts	9.057*	.618	1.613	2.551*	.366
Positive environmental impacts	1.366	1.255	1.013	.646	.195
Negative environmental impacts	10.438**	1.338	.651	1.021	.217

ps – * $p < .05$; ** $p < .01$.

When Macau “returned” to Mainland China in 1999, its economic growth rate was -5.49% . To enrich the economic growth rate after Macau's return, the government of Mainland China began to execute many developmental strategies for Macau, such as allowing people from Mainland China “to freely travel in Hong Kong and Macau” and re-legalizing casino gambling in 2002. These related political and economic policies brought a large number of tourists to Macau; in particular, the tourists from Mainland China grew from 11 million in 2008 to 18 million in 2013 (Statistics and Census Service, 2014b). In addition, these official policies also stimulated its economic growth rate (to 16.69% in 2002). However, behind these bright developments and this positive economic growth, Macau's residents also had a horrible price to pay: a decrease in leisure/recreational spaces and green belts, a dependence on tourists from Mainland China for its economic growth, and socio-economic vulnerability (Hung & Peng, 2011). From the other perspective, visitor arrivals in Singapore had increased to nearly 50% in 2012 compared with the end of 2009 and reached an estimated high of 14.4 million since the first casino gambling establishment opened in February 2010. Although the establishment of casino gambling in 2010 could earn a

Table 10

Perceptual differences of Singapore's residents with the diverse social backgrounds toward the impacts of casino gambling.

Impacts of casino gambling	Area				
	Singapore				
	Item				
	Age	Educational background	Marital status	Residence time	Monthly income
	F value				
Positive social impacts	2.489	1.062	1.466	.662	.465
Negative social impacts	1.345	4.339**	7.365**	3.682**	7.821**
Positive economic impacts	5.655**	2.971*	4.274*	1.245	4.081**
Negative economic impacts	2.523	.536	4.996**	4.867**	.066
Positive environmental impacts	5.319**	1.811	3.426*	.178	1.132
Negative environmental impacts	1.755	1.208	5.826**	1.026	3.786*

ps – * $p < .05$; ** $p < .01$.

slight credit in regard of attracting considerable foreign tourists to visit Singapore, many professional analysts and residents in Singapore believe that the far-reaching development of non-gaming attractions certainly plays a significant role. In other words, Singapore has taken a different approach in connecting the developments of tourism and gaming industries and put more emphases on the influences of non-gaming attractions (such as the world's only night-time Formula One race, Universal Studios theme park, Bollywood shows, and fashion events) inside and outside the Integrated Resort Casino. Thus, non-gaming attractions allow Singapore to differentiate itself from Asia's casino capital of Macau by strategically developing Singapore as a family tourism destination rather than Macau's heavy dependence on the exclusive revenues of gambling or gambling-hotel complexity (Reuters, 2013). Therefore, when comparing the correlations between the residents' viewpoints and the residents' different social backgrounds between Macau and Singapore concerning establishment of casino gambling, it is necessary to acknowledge the influence of external forces (such as managerial styles of governmental administration, developmental stages of the gaming industry, and collective values of moral education).

Future research should explore whether the differences in social structures, culture, and established lifestyles between residents of Macau and Singapore, which may be influenced by their similar ethnic traditions and external economic-political interference, have led to differences in the residents' viewpoints toward the impact of casino gambling. Thus, hypothesis three in this study was partially justified.

5. Conclusion

Although they are somewhat different in terms of forms, purposes, and executive processes, gambling behaviors in both the East and West have existed for a long time (McMillen, 1996). In addition, since ancient times, many people have flocked to any place related to the activities of gambling (Vittachi, 1994). In fact, without considering ethical, political, and religious influences, the establishment of casino gambling is one of the fastest ways to stimulate the tourism industry (Ian, 1995). Thus, many governments (e.g., Japan and Vietnam) that consider tourism development a policy objective have enlisted the establishment of casino gambling as a noteworthy choice. As indicated by Wan (2012), people (the residents of Macau) accept every benefit from casino gambling but unavoidably encounter its negative impacts. Therefore, the development of casino gambling definitely triggers intricate emotions in the minds of local residents. For instance, Lee et al. (2010) demonstrated that the perceptions and attitudes of residents from different communities toward the impacts of casino development reveal certain degrees of differentiation. For that reason, the result of this study, the main purpose of which was to examine whether the attitudes toward the impacts of casino gambling of the residents from two mostly Chinese regions with different stages of developmental history (Macau's long history vs. Singapore's fresh history) have significant differences, would contribute some meaningful values to many fields.

Although the findings of this study, which included questionnaire surveys and statistical analyses, can justly support the research hypotheses, the researchers also noted some research limitations. First, because the contexts of the survey questionnaire used in this study are modified from those described by other researches, some dimensions of the modified questions (in particular, only three questions were related to the attitudes and participations of the survey respondents) have certain limitations. Thus, some improvements can be made to this study. Second, most of the questions associated with social, economic, and environmental impacts were examined from the perspectives of individual

concerns; thus, this study does not address more extensive viewpoints of family issues (e.g., family relationship, child-caring, living burden, rent pressure, and housing quality). Further studies can strengthen this dimension of family-related concerns. Third, according to the results of this study, it is definitely not satisfactory to compare the opinions of the survey respondents only based on their social backgrounds because there are more far-reaching factors (such as religious beliefs, social structure, and lifestyle) that can influence the behaviors and attitudes of local residents. Therefore, future studies could examine the influential differences of these extensive factors. As indicated by Lee and Back (2006), the residents' attitudes and perceptions toward casino impacts may also shift through different stages of industry development. Therefore, it is necessary to perform further research studies with proper modifications of the survey questionnaire after alterations in the political-economic environment and developmental stage.

As suggested by Swarbrooke (1999), tourism development needs to be economically viable but should not destroy resources (particularly recourses from physical environments and the social fabric of the host community) on which the future of tourism development closely relies. Wan (2012) also mentioned that the survey respondents believe that long-term and thorough planning can efficiently lessen the negative impacts of casino gambling establishments. Policies or legal regulations within the gaming industry (such as age limitations for entry or admission charges) could make the gaming industry more consolidated and could also prevent increases in the number of problem gamblers. The outcomes of this study reflect the viewpoints of the residents of Macau and Singapore toward the impacts of casino gambling development to a certain degree; therefore, this study could provide an important reference to the governments of these two areas in order to aid them in making long-term and efficient plans, policies, and regulations of industry developments. Other regions (particularly in countries with a high population of Chinese residents) could also consider utilizing the findings of this study as a policy-making reference for casino establishments.

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