國 立 雲 林 科 技 大 學
99 學年度博士班招生考試試題

所別：管理研究所
科目：管理會計學

一、請以「代理成本」及「交易成本」析論企業併購之利弊得失。(30%)

二、請闡述「different cost concepts for different purposes」之意。(20%)

三、為因應快速變遷之經營環境，非財務績效已成為管理人員所關注的重點，請簡要說明業界或學界所採用之非財務績效指標或管理工具有哪些？其主要作用與限制各為何？(50%)

一、Questions related to international accounting standard. (25%)

a. Why do we need a set of global accounting standard?

b. International accounting standard now is referred to as IFRS. Please define what is IFRS? Alternatively stated, what are the ingredients of IFRS at present?

c. What are the major differences between IFRS and the US-GAAP?

二、Earnings management has been a hot issue for scholars to investigate since Watts and Zimmerman (1986). (25%)

a. Please define earnings management.

b. What mechanisms are adopted by the management to achieve earnings management?

c. In examining earnings management, researchers use some methods to detect earnings management. Please describe one or two methods used by the researchers.

三、Discuss agency theory including its basic assumption, agency relationship, agency cost, why the political process has impact on agency relationships and why it does or does not explain accounting theory. (25%)

四、Discuss the relationship between accounting and contracts and define the contracting costs. (25%)

1. Please read the following paragraph and answer the questions: (1) please describe the sample design of this study, (2) what effects can be examined based on the confirmatory factor analysis? (3) what effects can be examined based on the analysis of SEM? (4) please assess the measurement model fits, convergent validity, discriminant validity of this study, and (5) based on Figure 1 and results, please draw the final model of this study **(25%)**
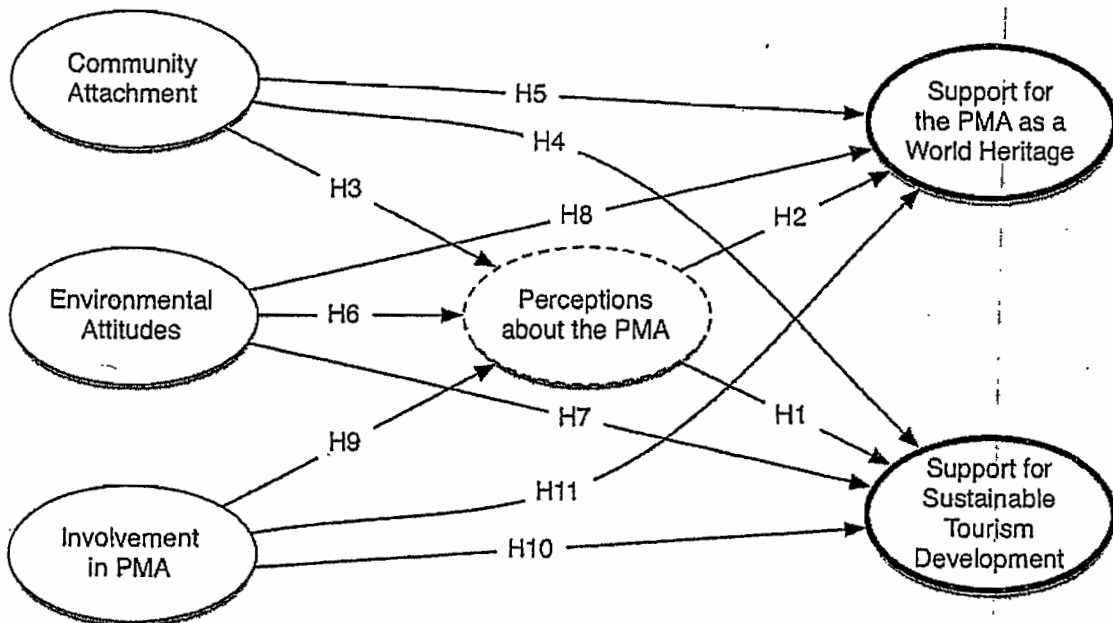

Figure 1. Proposed Research Model

Study Methods

Five communities were selected for this study: Fond Gens Libre, Sulphur Springs, Malgretoute, Baron's Drive and the town of Soufriere. The first three communities are located within the PMA, while Baron's Drive and Soufriere are gateway communities to the PMA. The marine zone and terrestrial conservation area within the PMA have few permanent inhabitants. The terrestrial multiple use zone has a residential population of about 1,500 persons in 400 private households. A systematic sampling method was used to select participants in the three communities located within the PMA. Given that these are pockets of communities with no central assembly points, the sampling procedure was conducted on the basis of households rather than individuals. Due to the small size of the communities, every other household was selected. Any member of the household who was 18 years or older

was asked to participate. In the absence of an eligible member, the next house was selected. Given the high illiteracy rates in these communities, and since local residents were generally not familiar with survey procedures, questions were asked directly to respondents and recorded by the interviewer. In addition, residents in the communities of Baron's Drive and Soufriere were also sampled. The PMA is located in the constituency of Soufriere, which serves as a gateway community. Given the sporadic spatial dispersion of households, simple random sampling was used to select participants, whereby every respondent had an equal chance of being selected. In Baron's Drive where residents tend to congregate in the street, participants were randomly selected as the interviewer walked from one end of the street to the other, selecting the first person in sight for the first interview and thereafter the next person. In Soufriere, the interviewer alternated starting points on different days with focus on the following central locations: bus stops, community park, the market and Bridge Street. Prior to data collection, a pilot study was conducted with seven local residents to assess face and content validity. Based on the feedback, minor adjustments were made to the questionnaire. Data were collected during June 2006–September 2006. Out of a population of 8,539 residents, a total of 319 residents were interviewed with a 98% response rate. The sample was stratified based on the population of the respective communities (see Table 1).

Data Analysis

Descriptive statistics were calculated for demographics and six research variables: Perception of PMA, Community Attachment, Environmental Attitudes, Level of Involvement, Support for PMA as World Heritage Site, and Support for Sustainable Tourism Development in the PMA. Following the descriptive analysis, a two-step data analysis approach was employed to test the hypothesized relationships among research constructs as recommended by Anderson and Gerbing (1988).

First, a measurement model using AMOS 7.0 (2006) was estimated to determine how well the indicators captured their specified constructs and to examine that the constructs were distinct from each other (Bollen 1989; Hair, Anderson, Tatham, and Black 1998). For each subscale, construct reliability and validity measures (factor loadings) were also computed. Construct reliability values greater than .70 are considered adequate (Nunnally and Bernstein 1994). Second, a structural equation modeling (SEM) analysis was employed to examine the proposed research model by testing the hypothesized relationships among the research variables. SEM was conducted using AMOS with maximum likelihood (ML) method of estimation. The fit of the measurement model and structural model were tested using multiple indices. First, the Chi-square values divided by the degrees of freedom was used as a frame of

reference. Recommended χ^2/df values range from 1.0 to 2.0 for small samples and from 1.0 to 3.0 for large samples (Kline 2005). Following Hu and Bentler (1999), the comparative fit index (CFI) was used. CFI values equal to or greater than .95 is indicative of a good-fit model. Additionally, the root mean square error of estimation (RMSEA) was used due to its ability to account for sample size (Browne and Cudeck 1992). The RMSEA ranges from 0 to 1, with values of .08 or less considered acceptable (Hu and Bentler 1999).

Results

Individual items were examined using Confirmatory Factor Analysis (CFA). The measurement model for each of the constructs suggested good fit to the data. The fit indices for a total measurement model revealed to be acceptable. The Chi-square/df ratio (2.36: χ^2 = 612.840, df = 260, p < .001) was lower than the suggested threshold (i.e., <3.0; Kline 2005). CFI (.94) and RMSEA (.065) satisfied the recommended cutoff (Hair et al. 1998; Hu and Bentler 1999). Collectively, the estimated model yielded a reasonable model fit to the data given the sample size and number of indicators (see Table 2). As a result of initial CFA tests, several items in various factors were dropped due to their low factor loadings. The results of final CFA tests yield that all item (indicator)-loadings for each factor were significant (p < .01) and ranged from .49 to .99 that provides strong evidence of convergent validity. The factor loadings were all above .60 (p < .05) except for three cases (see Table 3). Some of the respective items were reverse coded to maintain consistent directionality. In examining the internal consistency, coefficient alpha (Cronbach 1951) was assessed for construct reliability for each of the constructs. Evidence of internal consistency is provided by cronbach's alpha above Nunnally's (1978) recommended level of .70, ranging from .71 (Environmental Attitudes) to .97 (Support for Sustainable Tourism Development in the PMA) and construct reliability above Bagozzi's (1993) recommended level of .70, ranging from .74 (Environment Attitudes) to .97 (Support for Sustainable Tourism Development in the PMA) (see Table 4). Also included in Table 4 are the average variance extracted (AVE) estimates, which assess the amount of variance captured by a construct's measure relative to measurement error, and the correlations among the latent constructs in the model. Average variance extracted estimates of .50 or higher indicate convergent validity for a construct's measure (Fornell and Larcker 1981). Perception of PMA (.49) and Environment Attitudes (.41) were slightly below suggested threshold and all other values exceeded the recommended level of .50 ranging from .62 (Community Attachment) to .85 (Support for Sustainable Tourism Development in the PMA). To test discriminant validity, intercorrelations among latent constructs were examined. Evidence of the

discriminant validity comes from the fact that all the intercorrelations were less than the suggested threshold of .85 (Kline 1998), ranging from .03 to .68. In addition, if the square of the parameter estimate between two constructs is less than the average variance extracted estimates of the two constructs, then discriminant validity is supported (Fornell and Larcker 1981). This criterion was met across all possible pairs of constructs. These findings demonstrate that the proposed measurement model satisfied all the psychometric requirements, thus the measures were adequate for further analysis.

SEM analysis was performed to examine the overall model as well as individual tests of the hypothesized relationships among the latent constructs. Fitting the hypothesized model to the data resulted in acceptable goodness-of-fit indices: RMSEA = .071, CFI = .928, $\chi^2/df = 684.3/261 = 2.622$ (p < .001). These indicate reasonable fit of the model but not necessarily support for all the hypotheses. Support for the hypotheses was examined via the significance of the individual path coefficients. Hypothesis testing was accomplished by examining the completely standardized parameter estimates and their Critical Ratio values. As hypothesized, Perception of PMA had direct and positive impacts on both Support for Sustainable Tourism Development in the PMA (H1: standardized coefficient of .467; CR value 5.996) and Support for PMA as World Heritage Site (H2: standardized coefficient of .433; CR value 5.281). Respondents' Community Attachment on Perception of PMA (H3: standardized coefficient of .354; CR value 4.669), Support for Sustainable Tourism Development in the PMA (H4: standardized coefficient of .251; CR value 3.681) and Support for PMA as World Heritage Site (H5: standardized coefficient of .236; CR value 3.270) exhibited positive direct effects. Although Environment Attitudes had positive impacts on Perception of PMA (H6: standardized coefficient of .380; CR value 4.723), it did not directly influence Support for Sustainable Tourism Development in the PMA (H7) and Support PMA as World Heritage Site (H8). Examination of indirect effect suggested that Environment Attitudes indirectly influenced Support for Sustainable Tourism Development in the PMA (standardized coefficient of .178) and Support for PMA as World Heritage Site (standardized coefficient of .165) through Perception of PMA. Level of Involvement did not have significant impacts on Perception of PMA (H9) and the other two dependent variables (Support for Sustainable Tourism Development in the PMA-H10 and Support for PMA as World Heritage Site-H11).

2. Please read the following paragraph and answer the questions: (1) why did the authors employ the content analysis and in-depth interview for their study, (2) what effects or findings can be explored based on their analysis? (3) Please (give a table or figure to) show and explain the sampling frame of this study? (4) please explain the three organ farms (i. e., selected to be in-depth interview) , and (5) please explain the procedure of the in-depth interview (**25%**)

Data gathering: case study locations and websites

In order to ensure the validity and trustworthiness of the research design, several techniques were employed, including data triangulation (DeCrop, 2004), mechanical recording of the data, and maintenance of a reflective journal (Yin, 1994). Source data and materials for this case study were collected using three methods: (1) Review of documents from the Korea Tourism Organization, the Ministry of Agriculture and Forestry, and the three local governments covering the case study farms areas (e.g. Ministry of Agriculture and Forest 2006b, 2006c); (2) Content analysis of 38 websites of organic farm-based tourism (Table2), and (3) In-depth study of three organic farms (the websites of these three farms are part of the 38). The Korea Tourism Organization (http://www.knto.or.kr, accessed March 30, 2007) provides a comprehensive database of tourism destinations and attractions in Korea. This and the representative Farmstay portal (http://www.farmstay.co.kr, accessed March 30, 2007) were used to create a list of organic farms engaged in tourism practices in Korea. Using nature tourism, ecological tourism, organic or green agriculture tours/tourism/experience as key search terms, 64 organic farm destinations and attractions were identified. Two farms were excluded because no organic products, programmes, or services were described on their website, even though they introduced themselves as organic farms. The list was further sorted based on availability of websites for content analysis. Of the 53 of 62 organic farms that had a website, 14 were omitted because they shared the same delegated websites (such as http://www.farmstay.co.kr and http://www.greentour.or.kr, accessed November 25, 2008) and did not have their own sites. One website link was not working and was also removed. As of March 2007, the list contained a total of 38 organic farm tourism operations in Korea that owned their own websites. All 38 organic farm websites were content analyzed. The written texts presented on the website were examined and sorted into categories by comparing them with the criteria and dimensions shown in Table 1. The resulting text segments were also translated from Korean into English. This procedure was repeated twice to facilitate the stability of the analysis and the

consistency of content categorization.

Word-of-mouth recommendations obtained from tourism and agricultural professionals in practice, academics, and government resulted in selecting the three most highly recommended farms for in-depth phone interviews and study: Ecogreen Farm, Ariland, and Cheorwon Migratory Bird Village. They are located in the regions of Gyeonggi-do Province, Kangwon-do Province, and Chungcheongnam-do Province in Korea, and less than 30 miles from the nearest urban centers (Figure 1). Three years of prior work with the Organic Cooperative Network and the resulting friendship and trust developed with a number of organic farmers were very helpful in corroborating these study site recommendations and setting up telephone interviews with the three farm owners. Interviews were conducted in April and May 2007: two follow-up interviews with each respondent were necessary as the initial interviews required extensive interpretation. Open-ended questions to gather information on each of the five categories in the general framework (Table 1) were developed to guide the interview process (e.g. on the history of the organic farm and its tourism programmes, motivation to launch organic farming and tourism activities, farming practices, etc.). A total of nine in-depth telephone interviews averaging 1 hour were conducted in Korean (one of the researchers is Korean) and subsequently translated into English. Thematic coding of the data and grouping of relationships into major themes and sub-themes used the framework's five categories as a guide, and a careful check that no new categories emerged. The 38 websites were also analyzed using the items in Table 1 as a guide.

篇名：**Residents' perceptions of casino impacts: A comparative study**
作者：**Choong-Ki Lee , Soo K. Kang , Patrick Long , Yvette Reisinger**
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3. 本研究主要以兩個不同的區域，在發展博弈事業時當地的居民知覺進行比較調查。韓國是以江原道這個地區，美國則是以科羅拉多州作為研究地點。這項探索性研究調查了江原道和科羅拉多州方面的居民知覺與居民對於賭場的衝擊和效益程度的認知，請針對研究摘錄的部份結果進行概要說明（25%）。

4. 承上題，請您說明本研究的重要發現與研究貢獻（25%）。

Table 1
Demographic characteristics of Colorado and Gangwon Province respondents.

Demographic variables	Colorado N	%	Demographic variables	Gangwon Province N	%
Gender					
Male	182	47.9	Male	326	54.0
Female	198	52.1	Female	278	46.0
Total	380	100.0	Total	604	100.0
Age					
18–25	4	1.1	20–29	126	20.9
26–35	26	6.8	30–39	134	22.2
36–45	46	12.1	40–49	155	25.6
46–55	120	31.6	Older than 50	189	31.3
56–65	106	27.9			
Older than 65	78	20.5			
Total	380	100.0	Total	604	100.0
Marital status					
Single	52	13.8	Single	158	26.2
Married	226	60.1	Married	435	72.0
Others	98	26.1	Others	11	1.8
Total	376	100.0	Total	604	100.0
Education					
Some high school or less	2	0.5	Elementary school	47	7.8
High school	54	14.2	Middle school	312	51.7
Some college/vocational AD	156	41.1	2 year college	120	19.9
4 year college or higher	168	44.2	4 year college or higher	125	20.7
Total	380	100.0	Total	604	100.0
Children with K-12					
Yes	58	15.3	Yes	276	45.7
No	322	84.7	No	328	54.3
Total	380	100.0	Total	604	100.0
Casino employment					
Casino	68	17.8	Casino	40	6.6
Others	312	82.2	Others	564	93.4
Total	380	100.0	Total	604	100.0
Casino development support					
Yes	148	39.1	Yes	246	40.7
No	164	43.4	No	162	26.8
Doesn't matter	66	17.5	Doesn't matter	196	32.5
Total	378	100.0	Total	604	100.0

Note: Age was measured with different categories according to each site's primary study purpose.

Table 2
Results of factor analysis for residents' perceptions, benefits, and support for casino development in Colorado.

Factors and items[a]	Factor loading	Eigen value	Variance explained (%)	Reliability (α)
Perceptions				
Factor 1: Negative social impact		9.82	35.09	0.92
Casino development caused more destruction of families	0.760			
Casino development caused more divorces	0.750			
Casino development increased the problem of prostitution	0.693			
Casino development caused more bankruptcies	0.690			
Casino development caused more alcohol and drug problems	0.680			
Casino development brought more usury to my community	0.674			
Casino development caused more speculative betting	0.668			
Casino development brought more crimes	0.656			
Casino development resulted in more gambling addictions	0.639			
Casino development brought more political corruption	0.629			
Factor 2: Positive social impact		2.86	10.34	0.84
Casino development contributed to traditional and cultural preservation	0.744			
Casino development improved residents' pride	0.720			
Casino development enhanced the community spirits	0.700			
Casino development increased tourists' spending	0.606			
Casino development helped the preservation of historic/cultural sites	0.580			
Casino development improved educational environment including funding	0.523			
Factor 3: Negative environmental impact		2.21	7.88	0.84
Casino development made my community more crowded	0.809			
Casino development caused more traffic congestion	0.793			
Casino development increased noise	0.687			
Casino development destroyed the natural environment	0.504			
Casino development caused more litters	0.483			
Casino development caused more water pollution	0.410			
Factor 4: Positive economic impact		1.30	4.67	0.76
Casino development increased local tax revenues	0.836			
Casino development increased employment opportunities	0.706			
I have higher income because of the casino development	0.646			
Casino development increased external investments and businesses	0.476			
Factor 5: Negative economic impact		1.15	4.10	0.72
Casino development increased the cost of living	0.739			
Casino development increased tax burdens	0.727			
Total variance explained			62.08	
Benefits		1.72	86.10	0.83
The casino development benefits myself	0.928			
The casino development benefits local residents	0.928			
Support		4.23	84.59	0.95
The casino development makes this community a better place to live	0.924			
I am proud of living in a casino town	0.937			
The casino development is the right choice for my community	0.923			
The future of my community looks bright due to the casino development	0.898			
I have supported the casino development in my community	0.897			

[a] 5 Likert-type scale, where 1 = strongly disagree, 3 = neutral, and 5 = strongly agree.

Table 3
Results of factor analysis for residents' perceptions, benefits, and support for casino development in Gangwon Province.

Factors and items	Factor loading	Eigen value	Variance explained (%)	Reliability (α)
Perceptions				
Factor 1: Negative social impact with direct gambling costs		6.69	23.90	0.90
Casino development caused more bankruptcies	0.844			
Casino development resulted in more gambling addictions	0.836			
Casino development caused more speculative betting	0.825			
Casino development caused more destruction of families	0.738			
Casino development brought more usury to my community	0.697			
Factor 2: Negative environmental impact		3.54	12.64	0.73
Casino development increased noise	0.819			
Casino development caused more litters	0.801			
Casino development caused more water pollution	0.767			
Casino development caused more traffic congestion	0.713			
Casino development destroyed the natural environment	0.666			
Casino development made my community more crowded	0.568			
Factor 3: Negative social impact with indirect gambling costs		2.46	8.80	0.85
Casino development caused more alcohol and drug problems	0.782			
Casino development brought more crimes	0.754			
Casino development caused more divorces	0.686			
Casino development increased the problem of prostitution	0.665			
Casino development brought more political corruption	0.645			
Factor 4: Positive social impact		1.82	6.50	0.78
Casino development contributed to traditional and cultural preservation	0.775			
Casino development enhanced the community spirits	0.766			
Casino development improved residents' pride	0.703			
Casino development improved educational environment including funding	0.668			
Casino development helped the preservation of historic/cultural sites	0.658			
Factor 5: Positive economic impact		1.40	4.99	0.72
Casino development increased tourists' spending	0.747			
Casino development increased employment opportunities	0.729			
Casino development increased external investments and businesses	0.710			
Casino development increased local tax revenues	0.641			
I have higher income because of the casino development	0.529			
Factor 6: Negative economic impact		1.30	4.64	0.65
Casino development increased tax burdens	0.856			
Casino development increased the cost of living	0.795			
Total variance extracted			61.47	
Benefits		1.65	82.33	0.79
The casino development benefits myself	0.907			
The casino development benefits local residents	0.907			
Support		3.37	67.32	0.88
The casino development makes this community a better place to live	0.862			
I am proud of living in a casino town	0.834			
The casino development is the right choice for my community	0.821			
The future of my community looks bright due to the casino development	0.813			
I have supported the casino development in my community	0.769			

[a] 5 Likert-type scale, where 1 = strongly disagree, 3 = neutral, and 5 = strongly agree.

4.3 Comparison of mean differences between two data collection sites

The differences between Gangwon and Colorado respondents' perceptions of the impacts, benefits, and support for casino development were found. As shown in **Table 4**, generally Colorado respondents perceived Positive Economic ($\overline{X}$ =3.69) and Positive Social Impact ($\overline{X}$ = 2.86) of casino development to be more positive than respondents in Gangwon Province ($\overline{X}$ = 3.18 on Positive Economic and $\overline{X}$ = 2.56 on Positive Social Impact) at p< 0.001 (t = -9.47, t = -5.34, respectively). Adversely, the results also indicated that Gangwon respondents perceived the Negative Social Impact with direct gambling costs ($\overline{X}$ = 3.88) to be worse than their Colorado counterparts ($\overline{X}$ = 3.36) at p< 0.001 (t = 9.94). Finally, Negative Environmental Impact, Negative Social Impact with indirect gambling costs, and Negative Economic Impact were not significantly different between the two data collection regions.

As for perceived benefit, Colorado respondents perceived benefits as being somewhat better than Gangwon respondents, but they were not statistically significant. It should be also noted that both sets of residents were more likely to perceive "benefit to local residents" as being much higher than "benefit to myself." On the other hand, Gangwon respondents ($\overline{X}$ = 3.09) showed stronger support for casino development than their counterparts ($\overline{X}$ = 2.87) in Colorado at p <0.01 (t = 3.07).

4.4 Comparison of relationship between impacts and benefits

This study explored whether derived impact factors have any significant effects on perceptions of benefits in each data collection site. To this end, the benefit factor was regressed on the impact factors where the regression models were found to be statistically significant at p <0.01 for both Gangwon (F = 28.15, Adj. R^2 = 0.22) and Colorado (F = 77.00, Adj. R^2 = 0.57). As shown **in Table 5**, the three factors of Positive Social Impact, Negative Social Impact with indirect gambling costs, and Positive Economic Impact were found to have significant effects on the benefit factor for Gangwon respondents. On the other hand, two factors, Positive Social Impact and Positive Economic Impact, appeared to have significant effects on the benefit factor for Colorado respondents. In summary, those who perceived social and economic impacts positively in both communities would perceive benefits more strongly, thus supporting the social exchange theory across the two-country samples.

Furthermore, a Z-test was performed between regression coefficients of the significant explanatory variables for the two countries. Only the effect of Positive Social Impact on the benefit factor was significantly different between Gangwon and Colorado residents (Z = -1.662), indicating that the effect of Positive Social Impact on the benefit factor was stronger among Colorado residents than those in Gangwon Province.

4.5 Comparison of relationship between impacts and support

This study also examined whether impact factors had any significant effect on support for casino development (see Table 5). Thus, the support factor was regressed on the impact factors where the regression models were found to be statistically significant at $p < 0.01$ for both Gangwon (F = 27.38, Adj. R^2 = 0.21) and Colorado (F = 143.41, Adj. R^2 = 0.72). In the Gangwon data, four variables, Positive Social Impact, Negative Social Impacts with direct and indirect gambling costs, and Positive Economic Impact, were found to have significant effects on the support factor. Conversely, Negative Environmental Impact, Negative Social Impact with indirect gambling costs, Positive Social Impact, and Positive Economic Impacts appeared to have significant effects on the support factor in the Colorado data. Thus, the results were similar between Gangwon and Colorado in that the three variables of Positive Social Impact, Negative Social Impact with indirect gambling cost, and Positive Economic Impact were important explanatory variables for both sets of residents in predicting support for casino development, supporting the social exchange theory. Specifically, Positive Social and Positive Economic Impacts were more powerful predictors of residents' support than any other variable based on beta coefficients (β).

Furthermore, the results of a Z-test showed that regression coefficients for Negative Environmental Impact (Z = -2.954) and Positive Social Impact (Z = -4.077) were significantly different between Gangwon and Colorado residents. This finding indicated that the effects of Negative Environmental Impact and Positive Social Impact on residents' support were much stronger for Colorado residents than for Gangwon residents.

4.6. Comparison of relationship between benefits and support

Finally, the support factor was regressed on the benefit factor to investigate whether the benefit factor had any significant effect on support level for casinos (see Table 5). The regression models were found to be statistically significant at $p < 0.01$ for both Gangwon Province (F = 457.58, Adj. R^2 = 0.43) and Colorado (F = 611.96, Adj. R^2 = 0.62). In both sets of data, the benefit variable was found to have a significant effect on the support level. Thus, benefits were consistently important factors in both sets of respondents in predicting support for casino development. This finding suggested that those residents who perceived benefits more positively supported casino development more strongly. This result also supported the social exchange theory for both samples.

The results of a Z-test showed that regression coefficients for the benefit factor were significantly different between Gangwon and Colorado residents (Z = - 6.231). This indicated that the effect of benefits on residents' support was much stronger for Colorado residents than Gangwon residents.

Table 4

Comparisons of residents' perceptions, benefit, and support between Gangwon (GW) Province and Colorado (CO).

Factors and items[a]	GW	CO	Mean difference	t-Value	Sig.
Perceptions					
Factor 1: Negative social impact with direct gambling costs	3.88	3.36	0.53	9.94	0.000
Casino development caused more bankruptcies	3.94	3.23	0.71	10.75	0.000
Casino development resulted in more gambling addictions	4.02	3.95	0.07	1.03	0.302
Casino development caused more speculative betting	3.82	3.39	0.43	6.64	0.000
Casino development caused more destruction of families	3.67	3.25	0.43	6.22	0.000
Casino development brought more usury to my community	3.97	3.02	0.95	15.20	0.000
Factor 2: Negative environmental impact	3.42	3.43	−0.02	−0.33	0.740
Casino development increased noise	3.43	3.77	−0.34	−5.22	0.000
Casino development caused more litters	3.57	3.66	−0.10	−1.41	0.160
Casino development caused more water pollution	3.18	2.82	0.36	5.29	0.000
Casino development caused more traffic congestion	3.59	3.80	−0.21	−2.97	0.003
Casino development destroyed the natural environment	3.41	2.89	0.52	6.77	0.000
Casino development made my community more crowded	3.34	3.65	−0.31	−2.86	0.004
Factor 3: Negative social impact with indirect gambling costs	3.06	3.03	0.03	0.46	0.644
Casino development caused more alcohol and drug problems	3.05	3.46	−0.40	−5.28	0.000
Casino development brought more crimes	3.08	3.28	−0.20	−2.61	0.009
Casino development caused more divorces	3.11	2.94	0.17	2.55	0.011
Casino development increased the problem of prostitution	2.96	2.30	0.66	9.37	0.000
Casino development brought more political corruption	3.10	3.17	−0.07	−0.97	0.333
Factor 4: Positive social impact	2.56	2.86	−0.29	−5.34	0.000
Casino development contributed to traditional and cultural preservation	2.51	2.95	−0.44	−5.80	0.000
Casino development enhanced the community spirits	2.54	2.37	0.17	2.59	0.010
Casino development improved residents' pride	2.75	2.42	0.32	4.58	0.000
Casino development improved educational environment including funding	2.33	2.94	−0.60	−8.46	0.000
Casino development helped the preservation of historic/cultural sites	2.67	3.60	−0.93	−12.34	0.000
Factor 5: Positive economic impact	3.18	3.69	−0.52	−9.47	0.000
Casino development increased tourists' spending	3.27	3.75	−0.48	−6.29	0.000
Casino development increased employment opportunities	3.27	4.22	−0.95	−15.05	0.000
Casino development increased external investments and businesses	3.24	3.70	−0.46	−6.03	0.000
Casino development increased local tax revenues	3.36	4.02	−0.66	−9.69	0.000
I have higher income because of the casino development	2.74	2.78	−0.03	−0.38	0.703
Factor 6: Negative economic impact	3.27	3.29	−0.02	−0.32	0.752
Casino development increased tax burdens	3.38	3.06	0.32	3.86	0.000
Casino development increased the cost of living	3.17	3.53	−0.36	−4.82	0.000
Benefits	2.96	3.03	0.07	0.97	0.334
The casino development benefits myself	2.71	2.72	−0.01	−0.10	0.922
The casino development benefits local residents	3.20	3.35	−0.14	−1.87	0.062
Support	3.09	2.87	0.22	3.07	0.002
The casino development makes this community a better place to live	2.72	2.69	0.03	0.36	0.719
I am proud of living in a casino town	3.28	2.91	0.37	4.54	0.000
The casino development is the right choice for my community	3.21	2.95	0.25	3.27	0.001
The future of my community looks bright due to the casino development	3.21	3.02	0.18	2.27	0.024
I have supported the casino development in my community	3.04	2.76	0.28	3.50	0.001

[a] 5 Likert-type scale, where 1 = strongly disagree, 3 = neutral, and 5 = strongly agree.

Table 5
Results of regression models for Gangwon Province and Colorado.

Benefit regressed on residents' perceptions	Gangwon Province (N=604)				Colorado (N=380)				Z-test
	b1	SE	β	t-value	b2	SE	β	t-value	
(Constant)	1.719	0.298		5.777	0.916	0.418		2.193	1.567
Negative social (direct costs)	−0.066	0.057	−0.055	−1.145	−0.148	0.102	−0.086	−1.444	0.698
Negative environmental	−0.055	0.058	−0.039	−0.958	−0.035	0.071	−0.023	−0.492	−0.220
Negative social (indirect costs)	−0.199	0.065	−0.152	−3.080**	−0.147	0.083	−0.114	−1.775	−0.493
Positive social	0.244	0.060	0.159	4.069**	0.399	0.071	0.296	5.580**	−1.662*
Positive economic	0.491	0.055	0.352	9.003**	0.563	0.071	0.395	7.977**	−0.804
Negative economic	0.031	0.045	0.026	0.685	−0.011	0.046	−0.010	−0.248	0.656
	$F=28.15$ ($p<0.01$) Adj. $R^2=0.22$				$F=77.00$ ($p<0.01$) Adj. $R^2=0.57$				
Support regressed on residents' Perceptions	b1	SE	β	t-Value	b2	SE	β	t-Value	
(Constant)	−0.004	0.037		−0.113	1.478	0.326		4.535	−4.519
Negative social (direct costs)	−0.171	0.037	−0.170	−4.618**	−0.030	0.079	−0.019	−0.386	−1.613
Negative environmental	−0.024	0.037	−0.024	−0.652	−0.221	0.056	−0.151	−3.986**	−2.954**
Negative social (indirect costs)	−0.165	0.037	−0.164	−4.457**	−0.209	0.064	−0.171	−3.264**	0.592
Positive social	0.231	0.037	0.229	6.235**	0.503	0.056	0.395	9.064**	−4.077**
Positive economic	0.338	0.037	0.336	9.117**	0.407	0.055	0.303	7.410**	−1.051
Negative economic	0.035	0.037	0.035	0.945	−0.016	0.036	−0.015	−0.455	0.996
	$F=27.38$ ($p<0.01$) Adj. $R^2=0.21$				$F=143.41$ ($p<0.01$) Adj. $R^2=0.72$				
Support regressed on benefits	b1	SE	β	t-Value	b2	SE	β	t-Value	
(Constant)	1.413	0.083		16.985	0.648	0.105		6.192	5.729
Benefits	0.568	0.027	0.658	21.391**	0.835	0.034	0.790	24.738**	−6.231**
	$F=457.58$ ($p<0.01$) Adj. $R^2=0.43$				$F=611.96$ ($p<0.01$) Adj. $R^2=0.62$				

** $p<0.01$, * $p<0.05$.

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1. (10%)在假設檢定中，(1)解釋何謂「型一誤差」與「型二誤差」？(2)解釋何謂「P-value」？

2. (10%)某公司有三座生產 18 吋晶圓的廠房（分別是 A_1、A_2、A_3.），已知三座廠房的生產比率分別為 2：1：2。另根據以往品管工程師的紀綠知道三座廠房生產的不良率分別為 0.02，0.01，0.01，試問在客戶投訴收到不良品的情況下，該不良品來自 A_3 座廠房的可能性為何？

3. (10 %)在國際化趨勢下，外語能力已成為就業的必要條件之一，某報紙報導某大學負責人宣稱其學生 TOEIC 平均成績達 650 分以上。乙懷疑他們誇大不實，隨機抽樣該校 36 位學生測驗 TOEIC 成績，以檢定 $H_0 : \mu \geq 650; H_1 : \mu < 650$。乙的決策規則是若樣本平均數大於 640 分，則不推翻該學校的宣稱，假設母體標準差為 30 分，型一誤差的機率為 0.025，對立假設的 $\mu = 630$，請計算型二誤差的機率？

4. (10%)請詳述 ANOVA 的使用時機與原理。

5. (10%)何謂自由度(degrees of freedom)，請詳述之。

6. (10%)令 X 為一個指數隨機變數，參數β未知。(1)若樣本數為 n，求出β的最大概似估計式。(2)證明 $P(X > a + b \mid X > a) = P(X > b)$，其中 a > 0 且 b > 0.

7. (10%)試說明隨機區集設計(randomized block design)的目的及其 ANOVA 程序。

8. (10%) (1)寫出簡單線性迴歸模型及其基本假設。(2)解讀判定係數(coefficient of determination)的意義及其與相關係數(correlation coefficient)的關係。

9. (10%)一品管工程師監測一個生產汽車正時皮帶的流程，每小時他從生產線抽出 4 條皮帶並決定樣本的平均斷裂強度。如果平均強度太低則表示生產線運作不正常，需要加以調整。假設當流程運作正常，該流程發生樣本平均太低的機率是 0.02。假設每一個樣本被抽到的機率相同。平均來說，要發現第一個平均太低的樣本，需要抽出多少個樣本？

10. (10%)一名工程師研究某十字路口的交通狀況，觀察時間於早上 5:30 開始，以一小時為計算單位。令 X 表示南北向出現第一輛汽車的時間；Y 表示東西向出現第一輛汽車的時間。假設 X 與 Y 的聯合密度如下：$f_{XY}(x,y) = 1/x$　$0 < y < x < 1$　(1)求 E(X)及 E(Y)。(2)X 與 Y 是否獨立？

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Table A.3 (continued) Areas Under the Normal Curve

z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	0.5000	0.5040	0.5080	0.5120	0.5160	0.5199	0.5239	0.5279	0.5319	0.5359
0.1	0.5398	0.5438	0.5478	0.5517	0.5557	0.5596	0.5636	0.5675	0.5714	0.5753
0.2	0.5793	0.5832	0.5871	0.5910	0.5948	0.5987	0.6026	0.6064	0.6103	0.6141
0.3	0.6179	0.6217	0.6255	0.6293	0.6331	0.6368	0.6406	0.6443	0.6480	0.6517
0.4	0.6554	0.6591	0.6628	0.6664	0.6700	0.6736	0.6772	0.6808	0.6844	0.6879
0.5	0.6915	0.6950	0.6985	0.7019	0.7054	0.7088	0.7123	0.7157	0.7190	0.7224
0.6	0.7257	0.7291	0.7324	0.7357	0.7389	0.7422	0.7454	0.7486	0.7517	0.7549
0.7	0.7580	0.7611	0.7642	0.7673	0.7704	0.7734	0.7764	0.7794	0.7823	0.7852
0.8	0.7881	0.7910	0.7939	0.7967	0.7995	0.8023	0.8051	0.8078	0.8106	0.8133
0.9	0.8159	0.8186	0.8212	0.8238	0.8264	0.8289	0.8315	0.8340	0.8365	0.8389
1.0	0.8413	0.8438	0.8461	0.8485	0.8508	0.8531	0.8554	0.8577	0.8599	0.8621
1.1	0.8643	0.8665	0.8686	0.8708	0.8729	0.8749	0.8770	0.8790	0.8810	0.8830
1.2	0.8849	0.8869	0.8888	0.8907	0.8925	0.8944	0.8962	0.8980	0.8997	0.9015
1.3	0.9032	0.9049	0.9066	0.9082	0.9099	0.9115	0.9131	0.9147	0.9162	0.9177
1.4	0.9192	0.9207	0.9222	0.9236	0.9251	0.9265	0.9278	0.9292	0.9306	0.9319
1.5	0.9332	0.9345	0.9357	0.9370	0.9382	0.9394	0.9406	0.9418	0.9429	0.9441
1.6	0.9452	0.9463	0.9474	0.9484	0.9495	0.9505	0.9515	0.9525	0.9535	0.9545
1.7	0.9554	0.9564	0.9573	0.9582	0.9591	0.9599	0.9608	0.9616	0.9625	0.9633
1.8	0.9641	0.9649	0.9656	0.9664	0.9671	0.9678	0.9686	0.9693	0.9699	0.9706
1.9	0.9713	0.9719	0.9726	0.9732	0.9738	0.9744	0.9750	0.9756	0.9761	0.9767
2.0	0.9772	0.9778	0.9783	0.9788	0.9793	0.9798	0.9803	0.9808	0.9812	0.9817
2.1	0.9821	0.9826	0.9830	0.9834	0.9838	0.9842	0.9846	0.9850	0.9854	0.9857
2.2	0.9861	0.9864	0.9868	0.9871	0.9875	0.9878	0.9881	0.9884	0.9887	0.9890
2.3	0.9893	0.9896	0.9898	0.9901	0.9904	0.9906	0.9909	0.9911	0.9913	0.9916
2.4	0.9918	0.9920	0.9922	0.9925	0.9927	0.9929	0.9931	0.9932	0.9934	0.9936
2.5	0.9938	0.9940	0.9941	0.9943	0.9945	0.9946	0.9948	0.9949	0.9951	0.9952
2.6	0.9953	0.9955	0.9956	0.9957	0.9959	0.9960	0.9961	0.9962	0.9963	0.9964
2.7	0.9965	0.9966	0.9967	0.9968	0.9969	0.9970	0.9971	0.9972	0.9973	0.9974
2.8	0.9974	0.9975	0.9976	0.9977	0.9977	0.9978	0.9979	0.9979	0.9980	0.9981
2.9	0.9981	0.9982	0.9982	0.9983	0.9984	0.9984	0.9985	0.9985	0.9986	0.9986
3.0	0.9987	0.9987	0.9987	0.9988	0.9988	0.9989	0.9989	0.9989	0.9990	0.9990
3.1	0.9990	0.9991	0.9991	0.9991	0.9992	0.9992	0.9992	0.9992	0.9993	0.9993
3.2	0.9993	0.9993	0.9994	0.9994	0.9994	0.9994	0.9994	0.9995	0.9995	0.9995
3.3	0.9995	0.9995	0.9995	0.9996	0.9996	0.9996	0.9996	0.9996	0.9996	0.9997
3.4	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9998