

# Economic Impact Analysis of 2014 Taroko Gorge Marathon of Taiwan

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## ABSTRACT

*The purposes of this study is to investigate the economic impacts of non-resident participants' spending at the destination in the case of the 2014 Taroko Gorge Marathon event held in Hualien, Taiwan. A questionnaire on the Economic Impact of Road Race Events in Taiwan was developed as the research instrument which based on the literature on the economic impacts of sport events. The survey respondents were selected from the non-resident participants in the Taroko Gorge Marathon, and purposive sampling was used to gather 220 valid questionnaires. An input-output multiplier table generated by Directorate-General of Budget, Accounting and Statistics (DGBAS, 2014), Executive Yuan, Republic of China (Taiwan) was used to analyze the data. The results are as follows: 1) There were 15,000 participants in the 2014 Taroko Gorge Marathon event, including 10,500 non-resident participants. The average daily expenditure of the participant was about 3,117 NT dollars, while the total amount of input from various industries in the Hualien area was 58,737,000 NT dollars. 2) The non-resident participants of the 2014 Taroko Gorge Marathon event generated a total of 129,225,486 NT dollars in earnings for the industries in the Hualien area, with 34,625,505 NT dollars incremental income and 129 additional employment opportunities. It can be concluded that the non-resident marathon participants significantly impacted the economy in the Hualien area. The non-resident marathon participants spent more than did the tourists of general domestic tourism and single sport events. This shows that the flourishing and emerging road race event tourism in Taiwan could help create value and produce positive impacts on local economies. In particular, road race events can be used in the remote and non-metropolitan areas to counteract seasonality in the tourism industry.*

**Keywords:** *sport tourists, economic impacts, marathon events, input-output model*

## INTRODUCTION

### Background

In recent years, Taiwanese people have been enthusiastic to participate in road race activities. According to the statistics of Runners' Plaza (2016), from 91 events in 2006 to 637 events in 2015, the road race events have grown nearly 7 times in number in a decade (Table1), the participation population of road race has also significantly increased. An industry-related pattern has come about by consumers' direct and indirect spending at road race events, impacting the social, environmental and economic aspects of the road race events host community. Typically the research of sport event effect focus on the impact of infrastructure, environmental, economic, destination image enhancement, social, cultural, political, urban renewal and heritage, etc. (Dickinson & Shipway, 2007), with particular attention given to the economic impact of sports events on host community (Agrusa, Kim, & Lema, 2011; Bob, Swart, & Moodley, 2005; Turco, Riley, & Swart, 2002). Although the road race events (marathon events), comparing to large-scale events (mega-sporting events), are positioned only as small-scale, single-day

sporting events, with no infrastructure investment, they can still successfully create considerable economic impacts during the non-peak season for the local sports tourism (Kotze, 2006).

**Table 1: The trend of Taiwan road race events in the past 10 years**

| Year | Ultra Marathon | Marathon | Half Marathon | 11-20K | 6-10 Km | 5 km or less | Triathlon | Total |
|------|----------------|----------|---------------|--------|---------|--------------|-----------|-------|
| 2006 | 6              | 18       | 8             | 26     | 19      | 0            | 14        | 91    |
| 2007 | 2              | 12       | 6             | 3      | 20      | 1            | 10        | 54    |
| 2008 | 10             | 24       | 10            | 18     | 25      | 0            | 15        | 102   |
| 2009 | 9              | 28       | 9             | 10     | 25      | 8            | 13        | 102   |
| 2010 | 9              | 32       | 9             | 15     | 31      | 5            | 19        | 120   |
| 2011 | 9              | 41       | 10            | 21     | 30      | 10           | 32        | 153   |
| 2012 | 18             | 48       | 17            | 37     | 23      | 4            | 27        | 174   |
| 2013 | 24             | 74       | 33            | 54     | 29      | 4            | 33        | 251   |
| 2014 | 34             | 128      | 97            | 47     | 70      | 19           | 41        | 436   |
| 2015 | 139            | 164      | 124           | 31     | 76      | 70           | 33        | 637   |

Turco et al. (2002) pointed out that sport event economic impact is the net change a sport event has on the economy of the host community. It includes stimulating new spending, improving local income, and incurring the inherent cost by the sport event. Economic impact can be divided into direct and indirect, or secondary impacts. The direct impact is mainly related to the transactions from the events, such as sporting events and sports facilities investment, expansion of the procurement of materials, services and leisure facilities, tourists spending when participating in sports or watching the games as well as the consumption of supply and services. The indirect impact is the direct benefit from the impact of the chain of events, which includes employment levels change, gross regional production, manufacturers and institutional income (such as personal income or government revenue) (Turco et al., 2002). With these new sources of revenue, the host community can spend again on employment, consumption, maintenance, equipment purchase, insurance, taxes, and through the "leaks effect" to increase income for employees, shareholders and the headquarters of local communities, etc. This is called the "multiplier effect" that capital and consumers are put into effect for further production cycle, as a result local revenue or employment opportunities are generated (Gratton & Henry, 2001; Gratton, Shibli, & Coleman, 2005).

It is the ultimate goal of the research on the economic impact of sports events to estimate overall economic impact. However, it must be determined first the economic model, as a basis, for estimating overall economic impact (Frechtling & Horvath, 1999). The Input-Output (I-O) model or multiplier model was developed by the Leontief (1936, 1986). It can be used to calculate the multiplier (Matheson, 2009). Leontief defined input-output model analysis as "a systematic method for quantification of complex economic systems among the various sectors of mutual relations," that it is the interaction of various sectors of the same time. Fletcher (1989) also believed that the I-O model of economic impact study can provide a comprehensive view for economic decision-makers, and can focus on the interdependent relations of the various sectors of the economy, allowing researchers flexible construction of the model to meet research objective, in particular, can evenly reflect the output of various industrial sectors. These advantages make I-O model the choice for the analysis of the economic impact of sports events on national and regional tourism (Dwyer, Forsyth, & Spurr 2005; Jago & Dwyer, 2006; Lee & Taylor, 2005; Lia & Jago, 2013). Scholars generally believe that I-O model is suitable for estimating travelers' local spending, local residents' income, employment, tax and other economic benefits (Crompton, Lee, & Shuster, 2001; Frechtling & Horvath, 1999). While I-O disaggregated model can

distinguish production characteristics of various different sectors, such as transportation, accommodation, catering and entertainment (Fletcher, 1989; Liu, 2010).

Although in recent years, the road race (marathon) events are common and have been regularly organized in Taiwan, the road race (marathon) survey data on regional economic impact is incomplete, the theoretical basis of some report is weak, and the results analysis are not objective enough. To analyze the economic impact of road race (marathon) events on destination it is necessary to gather relevant information objectively and by appropriate economic theory. The Taroko Gorge Marathon is held every year in winter in Hualien, Taiwan, how is the economic impact of this race on the Hualien tourism during the off-season? This is worth investigating as it can be used as references for event organizers to continue applying or for related industries to help promote. The respondents of this study were selected from the non-resident participants in the 2014 Taroko Gorge Marathon event, using the input-output (I-O) model as the theoretical basis this study examined the participants' spending during the event. The findings can be used as references for marathon promotion policy and academic research of sports event and sport leisure industries.

### Research Objectives

- 1) To investigate the number of days (nights) stayed and the spending of non-resident participants during the 2014 Taroko Gorge Marathon event.
- 2) To estimate the economic impact of non-resident participants' spending during the 2014 Taroko Gorge Marathon event.

## METHODOLOGY

### Study Participants

In this study, the respondents were selected from the non-resident participants in the 2014 Taroko Gorge Marathon event (December 13, 2014 holding). Purposive sampling method was adopted to collect data from those aged 20 and above who are literate and capable of express themselves clearly. 300 questionnaires were distributed during the event. A total of 222 questionnaires were valid, with an effective response rate of 77.3%. The estimated number of participants for this study was attained from the interview with the organizer's secretary general, the registration information and the number of recipients of event souvenir (excluding accompanying persons). The estimated non-resident participants were 10,500 people (accounted for 70.0% of the total number of 15,000 participants).

### Instruments

The development of the questionnaire for the study on "The road race event participant consumption impact on the local economy in Taiwan" was divided into two phases: the first was referred to relevant literature (Liu & Yeh, 2003; Agrusa et al, 2011; Dwyer, Forsyth, & Dwyer, 2010; Kirkup & major, 2006; Lia & Jago, 2013) in preparing the first draft of the questionnaire, the main contents include road race participants behavior, road race event consumption conditions, such as accommodation, catering, entertainment, gasoline, procurement, and other miscellaneous expenditure. The second phase was to review the draft questionnaire with six experts from the field of sports management, the CVI value of the six experts ranged between 0.88 and 1.00, with an average of 0.924. It meets the requirements of CVI value being 0.8 or more (Pilot & Beck, 2006).

## Data Analysis

The collected data was first coded using the SPSS statistical software, then statistical analysis was done to produce the average consumption value (input value) of respondents for catering, accommodation, transportation, shopping, entertainment and others. In addition, descriptive statistics was conducted to find the frequency distribution and percentage (category variables), mean and standard deviation (continuous variables). Next the estimated participant's consumption value during 2014 Taroko Gorge Marathon event was calculated on the basis of the value of consumption. The calculation is as follows: the average daily consumption per participant  $\times$  total number of non-resident participant  $\times$  number of days (nights) stayed (Chiou, Yeh, Chen & Lee, 1999; Liu & Yeh, 2003). Using Excel software the aforementioned input value was entered into the table of multipliers from "The Table of 52 Sector Related Industries Compilation Report of 2011", by DGBAS (2014), to calculate the output value.

## RESULT AND FINDINGS

### Analysis of Participant demographics

This study targeted the non-resident participants who took part in the 2014 Taroko Gorge Marathon event. 300 questionnaires were distributed during the event and a total of 222 questionnaires were valid, comprising of 112 male responses (50.5%) and 110 female responses (49.5%). The average age of the participants is 31.38 years old, majority are of university education, earning NT\$ 20,000–39,999 monthly, having taken part in road race events 2-4 times within the last year, residing mostly in eastern of Taiwan. The subjects' demographics of this study (Table 2) are similar to the background variables of other studies of road race event in Taiwan (Chen, 2011; Chang & Chiou, 2011).

**Table 2: The analysis of participant's demographic of this study N=222**

| Variable   | Category                   | Frequency | Percentage |
|--|----------------------------|-----------|------------|
| Gender   | Male                       | 112       | 50.5       |
|  | Female                     | 110       | 49.5       |
| Age Group<br>M=31.38<br>SD=11.60                         | 20 years old & below       | 45        | 20.3       |
|  | 21-30 years old            | 67        | 30.2       |
|  | 23-40 years old            | 62        | 27.9       |
|  | 41-50 years old            | 28        | 12.6       |
|  | 51 years old & over        | 20        | 9.0        |
| Education  | Junior high school & below | 12        | 5.4        |
|  | High school                | 36        | 16.2       |
|  | College                    | 43        | 19.4       |
|  | University                 | 107       | 48.2       |
|  | Institute & above          | 24        | 10.8       |
| monthly income   | NT\$ 19,999 & below        | 62        | 27.9       |
|  | NT\$ 20,000–39,999         | 83        | 37.4       |
|  | NT\$ 40,000–59,999         | 55        | 24.8       |
|  | NT\$ 60,000–79,999         | 13        | 5.9        |
|  | NT\$ 80,000 & above        | 9         | 4.1        |
| Participation road race<br>times within the last<br>year | 1 time                     | 64        | 28.8       |
|  | 2-4 times                  | 116       | 52.3       |
|  | 5-9 times                  | 33        | 14.9       |
|  | 10 & above times           | 9         | 4.1        |
| Residence Area   | Northern Taiwan            | 58        | 26.1       |
|  | Central Taiwan             | 36        | 16.2       |
|  | Southern Taiwan            | 55        | 24.8       |
|  | Eastern Taiwan             | 71        | 32.0       |

### The estimated economic impact of the 2014 Taroko Gorge Marathon event

The subjects of this study were the non-residents participants of the 2014 Taroko Gorge Marathon event, about 10,500 as was provided by the organizers. The economic impact estimates were based on the participants' number of days (nights) stayed and their spending during the 2014 Taroko Gorge Marathon event.

#### A. The participants' number of days (nights) stayed and spending during the 2014 marathon event

The statistical analysis revealed that the participants' average number of days stayed was 1.83 (SD=.838) days, number of nights stayed 0.88 (SD=.803), average daily cost of food NT\$ 493.04 (SD=787.07), cost of accommodation NT\$ 639.91 (SD=783.35), cost of transportation NT\$ 596.56 (SD=782.10), cost of shopping NT\$ 582.85 (SD=1055.84), cost of entertainment NT\$ 456.74 (SD=838.92), others expenditures NT\$ 347.73 (SD=768.92). The expenditure calculation results are shown in Table 3. The total cost of food was amounted to NT\$ 10,353,000 (17.63%), total cost of accommodation NT\$ 6,720,000 (11.44%), total cost of transportation NT\$ 12,537,000 (21.34%), total cost of shopping NT\$ 12,222,000 (28.21%), total cost of entertainment NT\$ 9,597,000 (16.34%), total cost of other expenditures NT\$ 7,308,000 (12.44%). According to the sector classification of "The Table of 52 Sector Related Industries Compilation Report of 2011", DGBAS, Executive Yuan, Republic of China (Taiwan) (DGBAS, 2014), the total input value for the cost of food and accommodation combined as "food and hotel services" sector was amounted to NT\$ 17,073,000; the cost of transportation belonging to "transportation and warehousing communications" sector amounted to NT\$ 12,537,000; the cost of shopping belonging to "wholesale and retail" sectors amounted to NT\$ 12,222,000; the cost of entertainment belonging to the "arts, entertainment and recreation services" sectors amounted to NT\$ 9,597,000; the others expenditures belonging to "others services" sector amounted to NT\$ 7,308,000. The total input value was amounted to NT\$ 58,737,000 during the 2014 marathon event.

**Table 3: Non-resident participants' number of days (nights) stayed and their daily spending during the 2014 Taroko Gorge Marathon event**

| Item           | M       | Stayed days (nights) | Non-residents | Amounted   | %      |
|----------------|---------|----------------------|---------------|------------|--------|
| Food           | 493.04  | 2 days               | 10,500        | 10,353,000 | 17.63  |
| Accommodation  | 639.91  | 1 night              | 10,500        | 6,720,000  | 11.44  |
| Transportation | 596.56  | 2 days               | 10,500        | 12,537,000 | 21.34  |
| Shopping       | 581.85  | 2 days               | 10,500        | 12,222,000 | 20.81  |
| Entertainment  | 456.74  | 2 days               | 10,500        | 9,597,000  | 16.34  |
| Others         | 347.73  | 2 days               | 10,500        | 7,308,000  | 12.44  |
| Daily average  | 2898.13 | 2 days               | 10,500        | 10,353,000 | 17.63  |
| total          |         |                      |               | 58,737,000 | 100.00 |

Note: 1. Average daily consumption value according to the results of questionnaire survey.

2. Amounted = the average daily consumption × total number of non-resident participants × number of days (nights) stayed, while cost of accommodation was calculated by the number of nights stayed.

#### B. To estimate the economic impact of the non-resident participants' consumption during the 2014 Taroko Gorge Marathon event

This study estimated the economic impact of the non-resident participants' consumption to Hualien regions during the 2014 Taroko Gorge Marathon event. The total output value was divided into three parts: the total output value of the various industrial sectors, the income effect of the various industrial sectors, and the employment effects of the various industrial sectors. The output value analysis and discussion for each part is as follows.

(A) To estimate the output value of the various industrial sectors by non-resident participants' consumption during the 2014 Taroko Gorge Marathon event

The estimate formula was based on the front input value, the region's industries correlation coefficient and multiplier effect (Liu, 2010; Dwyer et al, 2010). The increased amount of money (increase output) of individual industrial sectors equals the industry correlation coefficient  $\times$  input values of 2011 for Taiwan (DGBAS, 2014) (see Table 4). The total amount of increased output of 52 industrial sectors by non-resident participants consumption during the 2014 Taroko Gorge Marathon event was NT\$ 129,225,486, of which catering and hotel services was NT\$ 18,209,974 (14.09%), wholesale and retail sector was NT\$ 18,166,627 (14.06%), transportation, warehousing and communications sector was NT\$ 16,641,303 (12.88%), arts, entertainment and recreation services sector NT\$ 10,014,158 (7.75%), other services sector was NT\$ 8,015,854 (6.20%), and the total output of the other 47 industrial sectors was NT\$ 58,177,571 (45.02%). From the above statistics the catering and hotel services sector, wholesale and retail sector, transportation and warehousing sector seemed to be the most significant contributors. Also worth noting is that the average multiplier of this study was 2.1772, higher than the 1.64 Donovan (1998) adopted from the Massachusetts government. This showed hosting the 2014 Taroko Gorge Marathon event gave considerable effect on promoting local economic activities.

**Table 4: The output value of the various industrial sectors by non-resident participants' consumption during the 2014 Taroko Gorge Marathon event**

| Industry Sector                 | Input (NT\$) | Multiplier | Output of 52 industry sector | Increase amount of individual industrial sectors | %      |
|---------------------------------|--------------|------------|------------------------------|--|--------|
| Catering & hotel service sector | 17,073,000   | 2.4089     | 41,127,130                   | 18,209,974                                       | 14.09  |
| Wholesale and retail sector     | 12,222,000   | 1.6910     | 20,667,431                   | 18,166,627                                       | 14.06  |
| Transport & warehousing sector  | 12,537,000   | 2.8161     | 35,304,820                   | 16,641,303                                       | 12.88  |
| Arts, Entertain. & Rec. sector  | 9,597,000    | 1.8335     | 17,595,958                   | 10,014,158                                       | 7.75   |
| Others service sector           | 7,308,000    | 1.9883     | 14,530,148                   | 8,015,854  | 6.20   |
| The other 47 industrial sectors | —            | —          | —                            | 58,177,571                                       | 45.02  |
| Total                           | 58,737,000   | 1.9360     | 129,225,486                  | 129,225,486                                      | 100.00 |

Note: 1. Increase amount of individual industrial sectors = Taiwan's "The Table of 52 Sector Related Industries Compilation Report of 2011", DGBAS  $\times$  Input value.

2. The increase amount of the other 47 industrial sectors = deduct the total by the total amount of the above five sectors' increase amount.

3. The output effect % = the increase amount of each industrial sector / total income amount effect of the 52 industrial sectors.

(B) To estimate the income effect of the various industrial sectors by non-resident participants' consumption during the 2014 Taroko Gorge Marathon event

The income effect of the various industrial sectors can be obtained with the increased output value by Taiwan's industrial labor compensation coefficient of 2011 (DGBAS, 2014). The income effect of individual industries can be further analyzed using the DGBAS (2014) input coefficient table calculation (Table 5). The income effect of catering and hotel services was NT\$ 6,980,367 (20.16%), wholesale and retail sector was NT\$ 6,502,959 (18.78%), transportation and warehousing sector was NT\$ 4,734,966 (13.67%), arts, entertainment and recreation services sector was NT\$ 4,184,226 (12.08%), other services sector was NT\$ 3,545,193 (10.24%), and total output of the other 47 industrial sectors was NT\$ 8,677,794 (25.06%). The total income increase of the various industrial sectors for the local population of Hualien area was NT\$ 34,625,505 during the 2014 Taroko Gorge Marathon event. The catering and hotel services sector, wholesale and retail sector, transportation and warehousing sector, and arts, entertainment and recreation services sector contributed most to the income increase. It is significant that a mere one-day road race event could attract 10,500 non-resident participants and generate an additional income of

NT\$ 34,625,505 for the local people. This shows how valuable marathon events are in promoting tourism for the Hualien area during the off-season in winter.

**Table 5: The income effect of the various industrial sectors by non-resident participants' consumption during the 2014 Taroko Gorge Marathon event**

| Industry Sector                 | Increase amount of individual industrial sectors | income coefficient | income effect | %      |
|---------------------------------|--|--------------------|---------------|--------|
| Catering & hotel service sector | 18,166,627                                       | .384241            | 6,980,367     | 20.16  |
| Wholesale and retail sector     | 18,209,974                                       | .357110            | 6,502,959     | 18.78  |
| Transport & warehousing sector  | 10,014,158                                       | .472827            | 4,734,966     | 13.67  |
| Arts, Entertain. & Rec. sector  | 8,015,854  | .521994            | 4,184,226     | 12.08  |
| Others service sector           | 16,641,303                                       | .213036            | 3,545,193     | 10.24  |
| Others 47 industrial sectors    | 58,177,571                                       | .149160            | 8,677,794     | 25.06  |
| Total                           | 129,225,486                                      | .267946            | 34,625,505    | 100.00 |

Note: 1. income effect = Taiwan's industrial labor compensation coefficient (DGBAS, 2014) × Increased output value of 2011.  
 2. The income effect % = the income effect of each industrial sector / total income amount effect of the 52 industrial sectors.  
 3. The income effect of the other 47 industries sectors = The total income effect deducts the total amount of the above five sectors.

(C) To estimate the employment effect of the various industrial sectors by non-resident participants' consumption during the 2014 Taroko Gorge Marathon event

It is hypothesized that an increase in output of one million NT\$ can increase a job employment (Chiou et al., 1999). The total amount of increased output of the 52 industrial sectors by non-resident participants consumption during the 2014 Taroko Gorge Marathon event was NT\$ 129,225,486. With the hypothesis of one million NT\$ for one job employment, hosting one road race event can create 129 jobs for Hualien area by non-resident participants' consumption in the case of the 2014 Taroko Gorge Marathon event. Further analysis was conducted on the employment job increase of individual industries (Table 6): the catering and hotel services sector was accounted for 18 jobs; the wholesale and retail sector accounted for 18 jobs; the transportation and warehousing sector accounted for 17 jobs; the arts, entertainment and recreation services sector accounted for 10 jobs; the other services sector accounted for 8 jobs; the other 47 industrial sectors with a total of 58 jobs. This single-day road race event was not inferior to any longer-period sporting events in creating job opportunities, particularly for the "catering and hotel services sector" and the "wholesale and retail" sector. However these employment jobs were short-term jobs, such as temporary staff, volunteers or part-time workers (Chiou et al., 1999).

**Table 6: The employment effect of the various industrial sectors by non-resident participants' consumption during the 2014 Taroko Gorge Marathon event**

| Industry Sector                 | Input (NTS) | Increase amount of individual industrial sectors | Employment effects | %      |
|---------------------------------|-------------|--|--------------------|--------|
| Catering & hotel service sector | 17,073,000  | 18,209,974                                       | 18                 | 13.95  |
| Wholesale and retail sector     | 12,222,000  | 18,166,627                                       | 18                 | 13.95  |
| Transport & warehousing sector  | 12,537,000  | 16,641,303                                       | 17                 | 13.18  |
| Arts, Entertain. & Rec. sector  | 9,597,000   | 10,014,158                                       | 10                 | 7.75   |
| Others service sector           | 7,308,000   | 8,015,854  | 8                  | 6.20   |
| Others 47 industrial sectors    | —           | 58,177,571                                       | 58                 | 44.96  |
| Total                           | 58,737,000  | 129,225,486                                      | 129                | 100.00 |

Note: 1. Employment effect = the increased amount of output for the various industrial sectors ÷ NT\$1,000,000.  
 2. Employment effect % = the employment effect of each industrial sector / total employment effect of the 52 industrial sector.  
 3. The employment effect of the other 47 industries sector = the total employment effect deducts the total employment effect of the above five sectors.

## DISCUSSION

### **The non-resident participants' number of days (nights) stayed and input values during the 2014 Taroko Gorge Marathon event**

To summarize the survey results: non-resident participants' average stay was 1.83 days and 0.88 nights, the average daily spending was about NT\$ 2898.13, the total input value was NT\$ 58,737,000 (see Table 3). As referring to previous studies it were found in this study that the pattern of the East regional tourism in Taiwan was still short term and low consumption based (National Development Council [NDC], 2014). The research findings on non-resident participants' days (nights) stayed, daily consumption value and total input value highlighted the significant contribution of the road race events hosted in Hualien to enhancing the local consumption. Furthermore, the results of this study showed that the non-resident tourists' spending of the 2014 Taroko Gorge Marathon event was higher than those of other sporting events and the general festival events, such as: the average stay of domestic tourists was 1.45 days, the average cost per person per day of travel was NT\$ 1,365 (Tourism Bureau, MOTC [TBMOTC], 2014), the non-resident participants' (athletic, staff and the audience) daily consumption was about NT\$ 2,166 in the 2009 National Games (Chen, 2009), the non-resident participants of the 2007 Women's Volleyball Grand Prix averagely spent about NT\$ 2,814, the non-resident participants of the Chinese Taipei Badminton Open averagely spent about NT\$ 2,848 (Cheng et al., 2008), and the non-resident tourists of the Ilan Festival Tongwan averagely spent about NT\$ 1,523 (Wu & Pan, 2004). It is evident that hosting road race events in Hualien did help boost the local economy with non-resident participants' stay and spending.

### **The economy impact during the 2014 Taroko Gorge Marathon event**

The input value of the non-resident participants of the 2014 Taroko Gorge Marathon event for the Hualien area was amounted to NT\$ 58,737,000, the non-resident participants' consumption boosted the total output of the various sectors to NT\$ 129,225,486, increased the income by NT\$ 34,625,505 for the local people of Hualien area, and created about 129 employment jobs. These all showed that hosting the Taroko Gorge Marathon event could increase the total output of the various local industries, generate income and create jobs for the local people by non-resident participants' consumption. These results of economic impact were similar to those of other research of short-term events (Burgan & Mules, 1992; Daniels, Norman, & Henry, 2004; Kim, Chon, & Chung, 2003). In addition, the economic benefits of the Taroko Gorge Marathon event identified in this study as referred to the estimated results of the output and employment of other domestic sporting events were significantly higher (Cheng et al., 2008). For example, the 2007 Women's Volleyball Grand Prix gave an outputs effect of NT\$ 60,740,784, an income effect of NT\$ 44,871,907, and an employment effect of 120 jobs; the 2007 Chinese Taipei Badminton Open's outputs effect was NT\$ 90,601,061, the income effect was NT\$ 65,479,046, and the employment effect was 130 jobs. These results of positive economic impact were similar to those of other research of road race events (Agrusa et al, 2011; Bob et al, 2005; Chalip & McGuirty, 2004; Daniels et al, 2004; Gratton et al, 2005; Kotze, 2006; Twynam & Johnston, 2004). The Taroko Gorge Marathon event was found to have a significant positive economy impact for the total output value, income effect and employment effect by the non-resident participants' consumption.

## CONCLUSION AND RECOMMENDATION

### Conclusion

This study focused on examining the input value and economic impact by the non-resident participants' consumption during the 2014 Taroko Gorge Marathon event. The study results showed that non-resident participants' days (nights) stayed and the input values (consumer value) really helped promote the local economy, and non-resident participants' consumption during the Taroko Gorge Marathon event was higher than those of the general domestic tourism and single sporting events. It is a better booster than national single sports events for the local economy on increasing the total output, the income, as well as the employment of the various industrial sectors. It apparently had helped increase input value and made a significant positive impact on the local economy. Most importantly, as the Taroko Gorge Marathon event was hosted in winter, the off-season for Hualien area tourism, not only would it help ease the issue of seasonality uneven distribution for the sport tourism activities in the Hualien area (Higham, 2005; Higham, & Hinch, 2002), it could also attract many interested sports tourists to visit Hualien, which is also an important direction for the development of sports tourism.

### Recommendation

To help enhance greater efficiency for the Taroko Gorge Marathon event, the following are the recommendations: (A) To explore the mainland China and international markets of road race events, as previous research on international marathon (road race) events (Agrusa, Agrusa, Tanner, & Lema, 2006; Agrusa et al, 2011; Balic & Rahman, 2005; Kotze, 2006) found that the international sport tourists had strong spending power and gave considerable direct economic benefits to the host destination. (B) Through the integrated marketing efforts of marathon (road race) events, local scenery and local delicacies the marathon (road race) events can be promoted internationally and this would help the development of not only the tourism industry but all the other related industries for the Hualien area. (C) The study also found that the number of participants was limited to 15,000, which prevented many potential non-resident participants from taking part in the event. This limitation is mainly the result of insufficient local transportation (train or flight restrictions) and accommodation (hotels and B & B). It is recommended to schedule more transportation services (train or flights) for the Hualien area, and at the same time to utilize alternative accommodation facilities, such as camping, school dormitories, in order to increase the number of participants for the marathon (road race) events, which consequently can help enhance the economic impact by non-resident participants' consumption to the tourism and related industries in the Hualien area. (D) Future studies should further explore the induced effect of marathon (road race) events on local industries, a more detailed examination on the industrial sectors induced and the extent of the induced effect by the marathon (road race) events, as this can be used as key reference for future industrial development and tourism marketing.

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