Evaluation of tourist's perceptions of relationship marketing and recreation benefits in festival

Abstract

This study attempted to segment the festival market using a cluster based on delineated perception of relationship marketing factors who attended the 2006 Yi-Lan Green Expo in Taiwan. This study also used the travel cost method (TCM) to estimate the festival demand function, and investigated the relationships between relationship marketing clusters and recreational demand. Finally, this study compared the Truncated Poisson (TPOIS), Truncated Negative Binomial (TNB), and On-Site Poisson count data models to estimate tourist trip demand using maximum likelihood estimation (MLE). This study obtained three main empirical results. First, this study can reduce truncated and endogenous stratification by using On-Site Poisson recreational model in festival. Second, relationship marketing clusters has a significant differential in festival recreational demand models. Third, the mean CS (Consumer Surplus) values range from $266.69 to $295.99 per trip for the 2006 Yi-Lan Green Expo in Taiwan.

Keywords: perceptions of relationship marketing; recreation demand; market segmentation; recreation benefits; count data models.

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I、Introduction

Festivals with powerful cultural and traditional connotations are attractive for visitors. By enhancing awareness of local culture, festivals also contribute to the local economy and provide recreation for the public (Long & Perdue, 1990). As in any other business, customer service is important in generating customer satisfaction and trust during festivals, and thus producing loyal customers. Thomas (1995) estimated that attracting new customers costs five times more than retaining old customers. The profitability of a festival thus is increased if the relationship of visitors can be maintained.

Customer relationships have received considerable attention from both academicians and practitioners (Kim & Cha, 2002). The increasing emphasis on relationship marketing is based on the assumption that establishing committed tourist relationships leads to positive tourist satisfaction, loyalty, words of mouth, and recreational demand in association with the festivals. Relationship marketing encompasses transaction marketing and aims to establish long-term, trusting, mutually beneficial relationships with valued tourists and festivals. Reichheld & Sasser(1990) indicated that as the relationship of a customer with a company lengthens, the company can increase its profits by nearly 100% by increasing customer retention by just 5%. Consequently, as a view of festival manager, marketing expenses is allocated more to maintain existing tourism customers within relationship marketing, thus, there are more efficient than other marketing tools. Considering the importance of festival market segmentation for promoting and understanding segment clusters based on perceptions of relationship marketing for tourists attending festivals.

Previous studies of festivals analyzed individual relationships between festival motivation and customer satisfaction (Driver & Knopf, 1977; Lee et al., 2004) as well as between festival motivation and service quality, customer satisfaction and behavior intention(Baker & Crompton, 2000; Shu, 2002). The research results all indicated that the perceptions of tourists influence recreational demand, including motivations, preferences, attitudes and so on. Understanding perceptions of tourist relationship marketing was important for three reasons: (1) activities were designed to meet tourist needs according to perceptions of relationship marketing for festival managers; (2) the higher the relationship among perception, satisfaction and recreational demands, the needs of tourist to be satisfied, the retention of recreation will be produced the better the satisfaction and retention; (3) it is easier to understand the decision process of tourist recreation to identify the priority sequences for perception and main contents for festival managers.

This study provides an economic argument contributing to the overall valuation for capturing non-market values of festival activities associated with the 2006 Yi-Lan Green Expo in Taiwan. The non-market valuation of natural resources, ecosystems, environment and festivals is a highly popular topic in the recent literature on environmental and natural resource economics (Mitchell & Carson, 1989; Arrow et al., 1993; Gowdy, 1997; Bromley, 1998; Brown & Gregory, 1999; Vatn, 2000; Mainwaring, 2001; Shrestha et. al., 2002; Prayaga et al., 2004).

The contribution of this study lies in implementing an empirical model of festival recreational demand by using TCM, and identifying the perceptions of relationship marketing and segmenting relationship marketing clusters by using factor Analysis

(FA) and cluster Analysis(CA); furthermore, this study employed three count data models to estimate the festival recreational demand models, analyzing the relation factors which influence recreational demand, examining the difference between relationship marketing clusters and recreational demand, and finally evaluating the festival recreational benefits under results in festival recreational demand estimation. It's nestling travel demand behavior to conduct perceptions of relationship marketing into festival demand models, also enhancing the goodness-of fit in the recreational demand models. This study can help local governmental (administrators) develop and implement effective relationship marketing and marketing segmentation strategies by understanding the relationships between perception of relationship marketing and recreational demand of tourists attending a festival.

The rest of this paper is organized as follows. Section 2 discusses the economic framework for visitor preferences relevant to recreational festival demand modeling and econometrics that describe perceptions of relationship marketing and other characteristic factors of the festival trip data. Section 3 deals with survey design and data collection procedures and identifies perceptions of relationship marketing and segmenting relationship marketing clusters using FA and CA. Section 4 presents the recreational demand model estimation results and recreational benefits of discussions of relationship marketing clusters. The last section presents conclusions and policy implications.

II、Festival recreation valuation methodology

Since Hotelling (1974) suggesting a TCM approach to value the natural resources, the application of the TCM has been widespread in valuing numerous types of natural resources and environment (Shrestha et al., 2002). Festival activity valuation just like other outdoor recreational resources, may be one of the most prolific areas of TCM applications (Walsh et al., 1992; Markowski et al., 1997; Shrestha et al., 2002)。

From a utility maximization framework, a visitor's of preference coming to a festival can be represented by the indirect utility function (Shrestha et al., 2002):

$$\underset{x,z}{Max} \ \bigcup(x,z|a,s) \quad subject \quad to \quad p\cdot x+q\cdot z=y \tag{1}$$

where，x is quantity demand of recreational activity, i.e. the number of trips to a festival activity, z represents the quantity of all other goods to be consumed, a is the vector of exogenous attributes of the festival activity, i.e. the perception of relationship marketing, s is the vector of socioeconomic characteristics, i.e. visitor's sex, marry, and education et al., p is the travel cost of a recreation trip to a festival activity, q is the travel cost of a recreation trip to a substitution festival activity, and y is income. From this utility maximization of trip to a festival activity, subject to the budget constraint, the Marshallian demand for recreational festival is derived as,

$$x = f(p,q,a,s,y) = -V_P(p,q,a,s,y)/V_y(p,q,a,s,y) \tag{2}$$

The right-hand side of (2) is Roy's identity, which links the Marshallian demand to the Hicksian income demand (Shrestha et al., 2002). According to the Marshallian demand function, the CS of a visitor will be estimated. This represents the economic

value of recreational festival to the visitor. Moreover, the festival trip demand is a function of travel cost, travel cost of substitution festival, socioeconomic factors, such as, income and sex, visitor's preference, such as, relationship marketing clusters. Then a festival travel cost model becomes,

$$x = f(TC, STC, STATY, HOLIDAY, INCOME, SEX, CLUSTERS) \quad (3)$$

Where, TC is the travel cost of a recreational trip to a festival activity, STC is the travel cost of a recreation trip to a substitution festival activity, STATY is the stay time in a festival, HOLIDAY is the time to go to a festival, INCOME and SEX are the socioeconomic of visitor, CLUSTERS is the relationship marketing clusters which segmented by using CA.

However, usual demand for recreational festival visitation is modeled using trip information from visitors. A major issue in TCM demand models is the non-negative integer feature of the trip data, also named count data (Creel & Loomis, 1990; Shrestha et al., 2002). A visitor's recreational trip demand to a festival is reflected in number of festival trips taken or demanded within a period of one year. In view of the issues involved in recreational festival demand modeling, due to the integer nature of the trip data, truncation of the data at zero visits, and some over-dispersion problems, the ordinary least squares (OLS) estimator wouldn't be the appropriate choice for evaluation of recreational benefits to a festival. A festival count data model that satisfies the discrete probability density function (PDF) and non-negative integers is the Poisson distribution represented by,

$$f(W = w) = \frac{\exp(-\lambda) \cdot \lambda^{w}}{w!} \quad (4)$$

This is a discrete PDF of recreational festival demand, where w is an element of the set of non-negative integers, i.e. numbers of festival trip demand within a period of one year. The parameter λ of w is both the mean and variance of the random variable W. The dependent variable vector x is distributed independent Poisson(λ) and λ varies by the matrix of explanatory variable X and the parameter vector β as(Shrestha et al., 2002),

$$\lambda = \exp(z\beta) \quad (5)$$

$$E(x|z) = Var(x|z) = \lambda = \exp(z\beta) \quad (6)$$

The equality of the mean and variance in the Poisson distribution is not realistic in recreation demand modeling, since the conditional variance often exceeds the mean resulting in an over-dispersion problem (Cameron & Trivedi, 1986; Grogger & Carson, 1991; Winkelmann, 2000; Shrestha et al., 2002). As a view to a festival visitor, recreational festival demands are based on visitor's survey data, not includes the non-visitors demand and their recreational benefits not accounted for in the festival valuation results. This problem is referred to as truncation of the festival's visitor data at zero (or positive) trip level. Therefore, the recreational festival demand in the estimation would be used the TPOIS and TNB. Otherwise, visitor's survey data in a festival could result the problem in endogenous stratification, which is the higher interview probability would producing in the visitor who is often attending a festival (Shaw, 1988). We can not solve the endogenous stratification by using the TPOIS and TNB recreational demand models. As a view of recreational demand estimation, we

could solve the truncation of the festival's visitor data and endogenous stratification simultaneously by using On-Site Poisson model (Shaw, 1988; Englin & Shonkwiler, 1995a; Habb & McConnell, 2002).

Therefore, this study compared TPOIS, TNB and On-Site Poisson count data models to estimate festival trip demands of tourist by using maximum likelihood estimation (MLE), the log likelihood function of above count data models as(Greel & Loomis, 1990; Haab & McConnell, 2002),

$$\ln L = \sum_{i=1}^{n} \left[z_i \beta x_i - \ln\left(e^{\lambda_i} - 1\right) - \ln\left(x_i!\right) \right] \tag{7}$$

$$\ln L = \sum_{i=1}^{m} \left\{ \begin{array}{l} \ln\left[\gamma\left(x_i + \dfrac{1}{\alpha} \right) \right] - \ln\left[\gamma\left(x_i + 1\right)\right] - \ln\left[\gamma\left(\dfrac{1}{\alpha} \right) \right] + x_i \ln\left(\alpha\right) + z_i \beta x_i \\ - \left(x_i + \dfrac{1}{\alpha} \right) \cdot \ln\left(1 + \alpha x_i\right) - \ln\left[1 - \left(1 + \alpha\lambda\right)^{-\frac{1}{\alpha}} \right] \end{array} \right\} \tag{8}$$

$$\ln L = \sum_{i=1}^{N} \left[z_i \beta \left(x_i - 1\right) - e^{z_i \beta} - \ln\left[\left(x_i - 1\right)!\right] \right] \tag{9}$$

Equation (7) is the zero level TPOIS log likelihood function. Equation (8) is the TNB log likelihood function, where $\gamma(.)$ is the gamma function, when $\alpha \to 0$, the gamma distribution converges to the Poisson distribution (Greel & Loomis, 1990), and an indictor to determine whether resulting in an over-dispersion problem. Equation (9) is the one zero level On-Site Poisson log likelihood function, this equation could solve the truncation of the festival's visitor data and endogenous stratification simultaneously by using On-Site Poisson model collocating equation (7), (8) and (9).

This study estimating the festival recreation demand count data models by using MLE, analyzing the influence factors of festival recreation demand, and probing the difference between recreation demand and relationship marketing clusters, finally, the evaluation of recreation benefits of festival visitor and recreation benefits between relationship marketing clusters will be discussing. The following section further discuss survey design and data collection procedures and identifying the perceptions of relationship marketing and segmenting relationship marketing clusters by using FA and CA.

III、Discussion of survey data and relationship marketing factors

3.1 Study site

The Yilan Green Expo was held in Yilan County, famous in Taiwan for its natural environment and cultural resources, sometimes known as the "post-garden of Taiwan." The 2006 Yilan Green Expo was created by the Yilan County Government in Taiwan to promote ecological awareness and sustainable development, and to encourage people to strive to protect the environment. In this theme of dancing with the autumn, all of visitors need to learn about various green and natural resources. The

Yilan Green Expo attracts over 400 thousand visitors per year.

The 2006 Yilan Green Expo involves static and dynamic display activities in 58 days. The static display includes the “Water and Grass exhibition”, “Beetle exhibition”, “ Spider exhibition”, “Science and Technology exhibition”, “ Brazil exhibition”, and “ Green Forest theater”, and the flower landscape, driftwood art, carved sculpture and local culture exhibitions in the Expo area. Moreover, the dynamic display includes “Acting troupes and Street Artists”, “Interaction of Theme area”, “Interaction Display in Leisure Circus” and so on. The above activities will provide visitors with a complete recreational experience (such as environmental protection, culture, knowledge, and perceptual).

The festival aim is to create a diverse, harmonious, flourishing and vital society, occupying a safe, healthy, beautiful and sustainable environment. With the theme of “Celebrate a Green Lifestyle!” the Expo hopes that visitors will see not just the beauty, but also the vitality of a green life. The expo also hopes to show visitors the results of sustainable business practices, and improve understanding of how to live harmoniously with the Earth (Yilan Green Expo Organizing Committee, 2006).

3.2 Determination of perceptions of relationship marketing and data collection

The perceptions of relationship marketing items to be accomplished were based on the views of Morgan & Hunt(1994), Bowen & Shoemaker(1998), Kim et al.(2001)and Kim & Cha(2002). A set of 21 perceptions of relationship marketing (Table 1) was initially generated from the above review of relationship marketing related to visitor perceptions and this study also considered to the appropriate for measuring visitor perceptions of relationship marketing in relation to attendance of the 2006 Yilan Green Expo in Taiwan. All perceptions of relationship marketing items were scored on a 5-point scale ranging from ‘1=strongly disagree’ to ‘5=strongly agree’.

Otherwise, visitors to the 2006 Yilan Green Expo were questioned regarding the number of trips they had taken during the past 12 months, travel costs per trip, length of stay, whether they had attended others festivals during the past 3 months, aspects of their experiences, and socioeconomic information. Interviewers were instructed to interview only visitors, avoiding participation of others from the same group, although several visitors involved in a group could be interviewed individually. Otherwise, only adults were interviewed, with the instructions being to interview the head-of-household on encountering family groups (Shrestha et al., 2002).

An on-site survey was conducted of visitors attending the 2006 Yilan Green Expo, using purposive sampling. A total of 562 usable questionnaires were gathered during the festival. Frequency analysis was applied to the 2006 Yilan Green Expo survey were analyzed for frequency analysis. Of the questionnaire respondents, 347 were female (61.7%), and 215 were male (38.3%). The numbers of married (50.1%) and unmarried respondents were almost identical. A large percentage of respondents (42.5%) were aged between 20 and 29 years old, and students comprised 23.6% of respondents while business people comprised 21.2%. The respondents were generally highly educated, and 68.4% possessed a college education or higher.

3.3 Analysis of the relationship marketing perceptions of festival visitor

In addition to investigating how relationship marketing clusters and festival

recreation demand differ, this study estimates the benefits of relationship marketing clusters with regard to festival recreation. Therefore, this section conducts factor analysis with a varimax rotation procedure to identify underlying dimensions of the relationship marketing perceptions of visitors to the 2006 Yilan Green Expo. Table 1 lists the results of FA where 1 item with factor loading below 0.4 was removed and 21 items were retained, and Table 1 lists the results of factor dimensions of relationship marketing. All three factors of relationship marketing had eigenvalues exceeding 1, and total variance was accounted in 69.745%; furthermore, all of the FA indicators had confirmed for the Hair's et al.(2006) criterion. Furthermore, all relationship marketing factor loadings exceeded 0.55. Relatively high factor loadings indicate a high correlation between the delineated factors and individual items (Lee et al., 2004).

The first dimension was labeled "service providers' attributes", and explained 27.7% of the total variance with a reliability coefficient of 0.94. The relatively large proportion of total variance for that factor can be attributed to differences in the degree to with the individual employee "has a nice manner", "provides adequate service", "has a professional appearance", and "demonstrates adequate knowledge of the festival service", therefore service provider attributes are the key factor underpinning relationship marketing in the 2006 Yilan Green Expo. The second dimension was labeled "relational and mutual orientation" and explained almost 22% of the variance with a reliability coefficient of 0.91. The factor loading of the priority of this dimension was "A festival employees try talk to you", "A festival employees tell you the mistakes he(she) made", "A festival employees devote time to you", "I have expressed dissatisfaction with service to a festival employee", and "A festival employee helps you make a decision of consumption", therefore named the "relational and mutual orientation". The final dimension was labeled "customer orientation", explained nearly 20.1% of the variance, and had a reliability coefficient of 0.92. The factor loading of the priority of this dimension was that a festival employee "tries to understand changes in visitor needs ", "resolves all of your problems", "is capable with regard to customer needs", and "deals with your inquiries and complaints expeditiously" , with employees displaying all of these traits being considered to display customer orientation.

Generally, the factor structure of the relationship marketing was delineated consistent with past relationship marketing references, as presented by Kim & Cha(2002). Thus, understanding segment clusters based on perception of relationship marketing can increase the confidence or estimates of festival recreation demand models, and grouping of festival relationship marketing are somewhat comprehensive.

3.4 Segmentation of festival visitor relationship marketing clusters

According to the results of FA, the perceptions of relationship marketing of festival visitors were delineated into three dimensions, "service providers' attributes", "relational and mutual orientation", and "customer orientation", respectively. To improve our understanding of the above factor structures, CA was applied to the relationship marketing factors. The CA method involved grouping similar visitors into a single cluster, maximizing the difference between clusters and clusters, and maximizing visitor homogeneity within clusters. A K-means clustering method and non-hierarchical algorithm were used to segment the optimal cluster number based on the relationship marketing factors, and iterated until the variation in Euclidean distance between centroids changed was below 2% (Lee et al., 2004; Hair et al., 2006).

CA suggested that a three-cluster solution was most appropriate for visitor relationship marketing perception data in the 2006 Yilan Green Expo. Multi-variate statistics indicated data with differences with 1% significance between the three clusters (Table 2). One way analysis of variance (ANOVA) test also indicated that all three factors helped differentiate the three relationship marketing clusters ($p<0.001$). Furthermore, Scheffe multiple-range tests revealed statistically significant differences between all clusters with respect to all factors. This finding generally supports the appropriateness of each classification listed in Table 2, as listed and detailed below.

Cluster I: Service attribute seekers. This cluster contained 203 visitors, representing the largest sample of visitors. This cluster appeared to have the highest mean score in "service provider attributes" among the three cluster groups, respectively. This cluster was named the "service attribute seekers", based on the mean score characteristics with respect to the factors. Furthermore, multi-relationship seekers displayed 1.709 trips per visitor in the 2006 Yilan Green Expo.

Cluster II: Multi-relationship seekers. This cluster contained 199 visitors. This cluster displayed the highest mean scores across all the factors, and thus was named the "multi-relationship seekers" cluster, based on the mean score characteristics with respect to all the factors. Furthermore, service attribute seekers had the most trips(1.798 per visitor) in the 2006 Yilan Green Expo. This cluster is clearly the most important festival market segment.

Cluster III: Customer orientation seekers. This cluster contained 158 visitors, and thus represented the smallest sample of visitors. This cluster appeared to have the highest mean score of "customer orientation" among all the factors, and was named the "customer orientation seekers". Furthermore, customer orientation seekers reported 1.601 trips per visitor in the 2006 Yilan Green Expo. This cluster clearly contains the fewest important festival market segments.

Table1 Results of factor analysis of festival visitor's relationship marketing perceptions

Relationship marketing perception factors and items	**Factor loading**	**Eigenvalue**	**Variance explained (%)**	**Reliability coefficient**
Factor 1: Service providers' attributes		5.817	27.699	0.943
A festival employee has a nice manner	0.753			
A festival employee is adequate in providing service	0.750			
A festival employee's appearance is professional	0.749			
A festival employee demonstrates adequate knowledge about all the festival service	0.741			
A festival employee is well dressed	0.740			
A festival employee shows interest in self-development to provide better service	0.736			
A festival employee seems to have a lot of experience	0.727			
A festival employee has professional training and education about service	0.696			
Factor 2: Relational and mutual orientation		4.612	21.961	0.914
A festival employee trying make talk to you	0.700			
A festival employee tells you the mistakes he(she) made	0.693			
A festival employee devotes time for you	0.683			
I have expressed to a festival employee dissatisfaction with service	0.678			
A festival employee helps you make a decision of consumption	0.667			
I show respect to a festival employee	0.649			
I ask a festival employee detailed question	0.616			
A festival employee treats you equally no matter how much you purchase	0.555			
Factor3: Customer orientation		4.218	20.085	0.920
A festival employee tries to understand the change of visitors' needs	0.762			
A festival employee resolves all of your problems	0.740			
A festival employee is capable about customers' needs	0.736			
A festival employee deals with your inquiry and complaint expeditiously	0.730			
A festival employee deals with your inquiry and complaint friendly	0.709			
Total variance explained (%)			69.745	

Table 2 Results of cluster analysis for festival visitors' relationship marketing perceptions

Factors \ Clusters	Service Attribute Seekers (N=206)	Multi-Effect Seekers (N=199)	Customer Orientation Seekers (N=158)	F-value	Scheffe multiple range tests		
					I-II	I-III	II-III
Service providers' attributes	4.04[a]	4.34	3.13	336.01***	***	***	***
Relational & mutual orientation	3.37	4.28	3.15	337.90***	***	***	***
Customer orientation	3.54	4.33	3.31	206.28***	***	***	***

*** $p<0.001$. [a] Mean values were computed on the basis of 5 Likert scale(1=strongly disagree, 3=neutral, 5=strongly agree).

IV、Empirical estimation and discussion of festival recreation demand

4.1 Empirical estimation method and variable induction

While estimating the festival recreation demand counts data models using MLE, this study analyzes influences on festival recreation demand, and examines the differences between recreation demand and relationship marketing clusters and finally evaluates recreation benefits of festival visitor and recreation benefits between relationship marketing clusters. Previous studies have merely estimated the recreational demand model in numerous fields (including fishing, travel, climbing etc.), and no previous study has included perceptions of relationship marketing in the recreational demand model. This study thus not only accounted the visitor's travel cost, experience, and socioeconomic factors, but also considered the above relationship marketing clusters (service attribute seekers, multi-relationship seekers and customer orientation seekers) in festival recreation demand count models, and arranged the three clusters to the dummy variable; finally, this study estimated the festival recreation demand model.

Table 3 lists the variable induction and descriptive statistics of the empirical model. The number of trips taken by the visitor within the past year, represented by the variable TRIPS, was modeled as the dependent variable of the regression. The explanatory variables of the models included STATY, time spent in 2006 Yilan Green Expo, hours per trip, HOLIDAY, whether the visitors traveled to the 2006 Yilan Green Expo on holiday. The socioeconomic variables also included income (INCOME) and sex (SEX). In the recreational demand model, COST denotes the total round trip travel costs for visitors to the 2006 Yilan Green Expo. COST often includes all of the travel costs (such as traffic, room and board, tickets et al.) plus the opportunity cost associated with travel time using one-quarter or one half of the wage rate (Cesario, 1976). This study estimated the opportunity cost of travel time using one-quarter of the wage rate. Otherwise, visitor trip decisions were influenced by STATY (Kealy & Bishop, 1986; Larson, 1993), this study included STATY in the festival recreation demand model. Finally, the relationship marketing clusters treated two dummy variables in the model (Table 3).

4.2 The empirical estimation results and discussion

The festival recreation trip demand models were estimated using TPOIS, TNB, and On-Site Poisson specifications (Table 4). The estimation results obtained using the TNB model demonstrate that the festival survey data would not over-dispersion problem at P=0.01, indicating that the t ratio was not significant. Overall, the signs and significance of the estimated coefficients are consistent with economic theory and with past studies of recreation demand comparing TPOIS and the On-Site Poisson model.

COST is negative and significant across the TPOIS and On-Site Poisson models at $P < 0.01$, consistent with Creel & Loomis (1990), Grogger & Carson (1991), and Shrestha et al.(2002). Travel cost, as a price variable with negative sign, is the main result of the festival recreation demand model, implying a downward slopping demand curve. That is, visitors may take fewer trips as travel cost increases. SCOST is positive and significant across and TPOIS and On-Site Poisson models at $P < 0.01$,

consistent with Haab & McConnell (2002). Travel cost of substitution festival, as another price variable with a positive sign, is the main result of the festival recreation demand model, suggesting that the demand curve of the substitution festival is upwards sloping. That is, visitors will take more trips to the 2006 Yilan Green Expo as travel cost of substitution festival increasing. Furthermore, INCOME is positive and significant at P<0.1 in the On-Site Poisson model, consistent with Creel & Loomis (1990), Grogger & Carson (1991), Shrestha et al.(2002), and Prayaga et al.(2004). Therefore, visitors increase the number of trips to the 2006 Yi-Lan Green Expo as income increases. HOLIDAY is positive and significant across the TPOIS and On-Site Poisson models at P <0.01, obviously, the visitor trips to 2006 Yi-Lan Green Expo in holiday are more than other travel times.

In estimating the relationship marketing clusters, SAKER is positive and significant across the TPOIS and On-Site Poisson models at P<0.1, indicating that when visitors perceive service provider attributes as more positive, they will make more trips to a festival. Furthermore, MULTIKER is positive and significant in the TPOIS and On-Site Poisson models at P<0.05, indicating that visitors take more trips to the 2006 Yi-Lan Green Expo as their perceptions of service providers' attributes, relational and mutual orientation and customer orientation improve.

As another point in the festival, the "MULTIKER" has multi-positive relationship marketing perceptions, there per trips (1.798) in festival was higher than for other clusters and contained 199 visitors (nearly the SAKER). Obviously, this cluster is the most important festival segmentation; festival administrators thus could think future relationship marketing position owing to the characteristics of this cluster. "SAKER" appeared to the "service providers' attributes" and had the largest visitors (203 visitors), there per trips (1.708) in festival were over than "customer orientation seekers", the festival could enhance the attributes of the service providers in attractive visitors. Furthermore, as a view of "customer orientation seekers" in festival management's strategy, this cluster had the lowest mean scores of all relationship marketing perceptions and contained fewer visitors, meaning the cluster was not the key "purpose visitor", and thus festival administrators put more time and costs into managing and marketing the "multi-relationship seekers" and "service attribute seekers".

4.3 Recreational benefits, results and implications

The economic values of festival recreation benefits are obtained using the On-Site Poisson recreation demand model listed in Table 5. Based on the performance of the estimated model, this study derives CS estimates using the On-Site Poisson model. Following Bockstael & Strand(1987), mean CS estimates for On-Site Poisson model are calculated using the negative inverse of COST coefficient($-1/\beta$) multiplies mean TRIPS(1.71). Furthermore, the mean CS between relationship marketing clusters are calculated using the above form. The CS value per trip is $281.22, and the 95% confidence intervals of the mean CS estimates per trip are $266.69 to $295.78.

The social welfare values of festival recreation for the 2006 Yi-Lan Green Expo of Taiwan are estimated using total annual visits by visitor population. Based on a total visitor population of 405000, and taking a mean number of trips of 1.71, the total number of annual trips is estimated to be 692,550. Consequently, total social welfare is estimated at between $184.69 and $204.84 million in 2006 U.S. dollars.

The mean CS between relationship marketing clusters is also calculated in Table 5. The CS values per trip for “Service Attribute Seekers”, “Multi-Effect Seekers”, and “Customer Orientation Seekers” are $281.03, $295.72, $263.34. The CS estimates between relationship marketing display significant difference at $P<0.05$. Furthermore, the 95% confidence intervals of the mean CS estimates per trip for the above three clusters are $257.28 to $304.78, $267.19 to $324.25, and $241.94 to $284.78. These results also showed that the mean CS estimates per trip for “Multi-Effect Seekers” is the highest, with the “Service Attribute Seekers” in the middle, and “Customer Orientation Seekers” being lowest.

“Multi-Effect Seekers” contained the most festival visitors, the mean scores of service provider attributes, relational & mutual orientation, and customer orientation in “Multi-Effect Seekers” are higher than other clusters of relationship marketing perception, and this cluster has the highest mean CS values. Therefore, this cluster is the most important market segment for the festival. The mean scores of service provider attributes in “Service Attribute Seekers” exceed those for other relationship marketing factors, have the middle ranking CS values; consequently, the 2006 Yi-Lan Green Expo could satisfy visitor needs owing to the good attributes of service providers. “Customer Orientation Seekers” comprised the smallest group of festival visitors, and the mean scores of all three relationship marketing factors in this cluster were lower than for other clusters of relationship marketing perception, and this cluster has the lowest mean CS values. Obviously, the 2006 Yi-Lan Green Expo could not satisfy the needs of visitors and relative relationship marketing clusters.

Table 3 Definition of the variables used and descriptive statistics in the festival recreation models

Variables name	Definition	Mean	Std. Dev.
TRIPS	Dependent variable, number of recreational festival visits to 2006 Green Expo	1.71	0.045
COST	Total round trip travel costs to 2006 Green Expo in NT dollars	1127	53.06
SCOST	Total round trip travel costs to 2006 Taipei Lantern Festival in NT dollars	364	19.03
INCOME	Visitor’s monthly income in NT dollars	34840	791
SEX	1, if visitor is a man, 0 otherwise	0.3861	0.02
STATY	Time spent in 2006 Green Expo, per trip in hours	4.6388	0.06
HOLIDAY	1, if the visitor go to 2006 Green Expo in holiday, 0 otherwise	0.5409	0.02
SAKERs	1, if visitor is belong to Service Attribute Seekers, 0 otherwise	0.3665	0.02
MULTIKERs	1, if visitor is belong to Multi-Effect Seekers, 0 otherwise	0.3523	0.02

Table 4 Festival recreation demand models results

Variable	TPOIS		TNB		On-Site Poisson	
	coefficient	t ratio	coefficient	t ratio	coefficient	t ratio
constant	-1.31	(-2.46)**	-2.90	(-2.24)**	-1.76	(-3.18)***
COST	-1.8E-04	(-2.28)**	-1.8E-04	(-1.52)	-1.9E-04	(-2.35)**
SCOST	3.8E-04	(2.56)**	5.1E-04	(1.50)	4.2E-04	(2.63)***
INCOME	6.6E-06	(1.61)	5.4E-06	(1.09)	7.2E-06	(1.67)*
SEX	-8.7E-02	(0.59)	-1.7E-01	(-0.58)	-9.4E-02	(-0.56)
STAYT	7.8E-03	(0.17)	8.6E-03	(0.13)	8.0E-03	(0.17)
HOLIDAY	3.4E-01	(2.12)**	3.9E-01	(1.52)	3.6E-01	(2.19)**
D1	3.9E-01	(1.82)*	4.2E-01	(1.19)	4.2E-01	(1.88)*
D2	4.8E-01	(2.26)	5.4E-01	(1.59)	5.1E-01	(2.34)**
α	-		2.1	(0.43)	-	
Log likelihood	-260.33		-254.03		-263.39	
Log likelihood Ratio	275.87***		12.59		184.58***	

N=562. ***Coefficient significant at $P \le 0.01$. **Coefficient significant at $P \le 0.05$ *Coefficient significant at $P \le 0.1$. $\chi^2_{(0.99,8)} = 21.66$.

Table 5 Consumer surplus($) estimates in 2006 Green Expo

	Consumer Surplus (N=562)	Service Attribute Seekers (N=206)	Multi-Effect Seekers (N=199)	Customer Orientation Seekers (N=158)
Per trip	281.22	281.03	295.72	263.34
95%CI*	(266.69 , 295.78)	(257.28 , 304.78)	(267.19 , 324.25)	(241.94 , 284.78)

*Conference Interval.

V、Conclusion

Festivals with strong cultural and traditional characteristics are attracting visitors and also contribute to the local economy and provide for public recreation. As in any other business, customer service is an important factor in generating customer satisfaction and trust during a festival, thus producing loyal customers. Profitability increases with the length of time for which a visitor maintains a relationship with a festival. This study attempted to segment festival markets using a cluster based on the delineated perception of relationship marketing factors among attendees of the 2006 Yi-Lan Green Exposition in Taiwan. This study also used TPOIS, TNB, and On-Site Poisson count data models to estimate trip demands of tourist by using MLE, and investigated the relationships between relationship marketing clusters and recreational demand. Finally, CS value per trip, total social welfare, and CS value of relationship marketing clusters were reported.

The 2006 Yilan Green Expo was held in Yilan County, famous in Taiwan for its natural environment and cultural resources. The 2006 Yilan Green Expo aimed to promote ecological awareness and sustainable development, and to encourage people to protect the environment. Over 400 thousand visitors annually visit the Yilan Green Expo. In this theme of dancing with the autumn, all visitors must learn varies green and natural resources. The average CS value per trip ranged between $266.69 and $295.78, and thus exceeded the average CS value per trip identified in previous studies of recreational festivals. Prayaga et al.(2004) estimated recreational festival value as lying in the range $187.06 to $266.99.Our study also shows that total social welfare owing to recreational festival during the 2006 Yilan Green Expo ranged from $184.69 to $204.84 million in 2006 U.S. dollars.

This study also estimated the average CS value using various relationship marketing clusters. Segmenting the festival markets and evaluating their recreational benefits based on relationship marketing perceptions is important holding and managing festivals effectively in the future. This study can help local governmental (administrators) develop and implement effective relationship marketing strategies by understanding the relationships between perceptions of relationship marketing and recreation demand of tourists attending a festival. The policy implications of this study include working to attract more natural, cultural-oriented and relationship marketing orientation visitors manage festival resources as part of the greater local economy and achieve sustainable management.

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