



A comparison of results of three statistical methods to understand the determinants of festival participants' expenditures

Samuel Seongseop Kim^{a,*}, Bruce Prideaux^{b,1}, Kaye Chon^{c,2}

^a Department of Hospitality & Tourism Management, Sejong University, 98, Gunja-dong, Gwangjin-gu, Seoul 143-747, Republic of Korea

^b School of Business, James Cook University, Cairns, Queensland, Australia

^c School of Hotel and Tourism Management, Hong Kong Polytechnic University, Kowloon, Hong Kong

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ABSTRACT

The aim of the research reported upon in this study is to examine the impact of visitors' socio-demographic and festival experience-related variables on expenditure levels and patterns of visits to festivals. Three statistical models including logit, OLS (ordinary least square) and Tobit models are employed to identify and examine the differences or similarities in results from three different approaches. A comparison of the three approaches using cross-section survey data generated differences in model fit. In addition, it was found that the set of independent variables which were significant in estimating festival visitors' expenditures varied between the three models. As such the findings of this study suggest a singular statistical approach may be inferior to multiple ones in gaining a full understanding of the determinants of festival participants' expenditure.

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1. Introduction

Successful festivals are able to make significant contributions to local economies as they attract visitors from other areas, generate revenue and on a broader scale raise the profile of the host community to regional, national and in some cases international communities. Carnival time in Rio de Janeiro for example generates significant visitor revenue and importantly for the city as well as Brazil generates substantial free promotion through media coverage (Getz, 2007). More specifically, festivals generate a range of economic and non-market benefits that enhance the local economy. Economic benefits include revenue generation and job creation (Crompton et al., 2001; Delpy and Li, 1998; Frey, 1994; Gamage and Higgs, 1997) while non-market benefits include reinforcement of a positive local image for the host community (Felsenstein and Fleischer, 2003; Getz, 1997) and enhancement to the communities' quality of life through the addition of vibrancy and vivacity (Kim and Petrick, 2005). Festivals may also help to preserve local heritage resources through the income they generate (Prentice and Andersen, 2003). Finally, local festivals or events may also be used as a political tool

to enhance the reputation of the local authorities hosting specific festivals (Jeong, 1998).

A review of the academic literature indicates that five areas of interest in festivals have emerged. The most popular area of interest concerns motivations for visiting festivals and events (Backman et al., 1995; Crompton and McKay, 1997; Formica and Uysal, 1996, 1998; Lee et al., 2004; Schneider and Backman, 1996; Scott, 1996; Mohr et al., 1993; Uysal et al., 1993). The second research area is residents' perceptions of festivals or similar special events (Burgan and Mules, 1992; Deccio and Baloglu, 2002; Jeong, 1998; Kim and Petrick, 2005; Mihalik and Simonetta, 1998; Ritchie and Aitken, 1985; Ritchie and Lyons, 1987; Soutar and McLeod, 1993; Waitt, 2003). A third area of interest centers on analyses of the economic impacts of festivals or events (Crompton and McKay, 1994; Crompton et al., 2001; Delpy and Li, 1998; Dwyer et al., 2005a; Gamage and Higgs, 1997). The fourth area of interest is concerned with issues related to improving the methodological approaches used to refine analysis of the economic impacts of festivals (Breen et al., 2001; Dwyer et al., 2001; Faulkner and Raybould, 1995; Jackson et al., 2005; Tyrrell and Johnston, 2003). Finally, a small number of researchers have investigated socio-demographic and cultural factors that influence the expenditure patterns of festival participants (Rao, 2001; Thrane, 2002).

The focus of research to date has gravitated towards motivations, residents' perception, and economic impact. Surprisingly, little attention has been directed towards investigations into the factors that determine visitor expenditure even though this is a significant area of interest for festival organizers. Failure to

* Corresponding author. Tel.: +82 2 3408 3716; fax: +82 2 3408 4314.

E-mail addresses: sskim@sejong.ac.kr (S.S. Kim),

Bruce.Prideaux@jcu.edu.au (B. Prideaux), hmkchon@polyu.edu.hk (K. Chon).

¹ Tel.: +61 7 40421039; fax: +61 7 40421474.

² Tel.: +852 2766 6382; fax: +852 2362 6422.

understand the influences that determine visitor's spending patterns may result in less than optimal benefits accruing from festivals. The determinants of an individual's expenditure may include socio-demographic profiles as well as economic, cultural, educational and psychological characteristics (Rao, 2001; Thrane, 2002). An improved understating of how these factors influence an individual's expenditure patterns will lead to a better understanding of the role of visitor satisfaction, intention to revisit, expected revenue generation and other benefits, all of which are of interest to festival organizers.

It is also apparent that little attention has been given to assessing the relative merits and strength and weaknesses of various statistical methods that have been used to investigate aspects of visitor expenditure. The consequence of this omission is that researchers may not be clear as to which techniques are the most appropriate for specific research objectives.

This study was designed to investigate the determinants of visitor expenditure and to evaluate the analytical methods that may be used in investigations of this nature. The research has two objectives. The first objective was to identify the impact that visitors' socio-demographic and festival experience-related variables have on the volume and patterns of their expenditure. Objective two was concerned about methodological issues in investigations into visitor expenditure. Previous research into the determinates of visitor expenditure have usually selected one of three possible assessment methods (binary logit model, OLS regression and a Tobit model) but often without arguing the advantages or disadvantages of the method selected compared to the other possible methods. Objective two therefore was to compare the three statistical models by evaluating the level of differences or similarities in results generated by each model. Results of this aspect of the research are expected to provide a more accurate understanding of festival visitors' spending patterns from a customer-oriented viewpoint. In addition, an improved understanding of the determinants of visitor expenditure patterns will assist marketers develop more effective marketing campaigns for festivals and will assist researchers and research users to develop a greater appreciation of the strength and weaknesses of each model.

2. Visitor expenditure at festivals and special events

A review of the literature revealed that three principle research directions have been taken into research into visitor expenditure. The most popular area of research has been estimation of the economic impact of visitor expenditure in the host community or host country (Crompton and McKay, 1994; Crompton et al., 2001; Delpy and Li, 1998; Dwyer et al., 2005a; Gamage and Higgs, 1997). Many early studies used input-output models to estimate the economic impact of visitor expenditure by calculating various multipliers. Results have provided information about the direct and indirect impacts on the host community or host country. More recent studies have adopted CGE (computable general equilibrium) modeling.

The second area that expenditure studies have focused on is measurement of where festival participants spend their money both in the host community and in the origin market. This type of research enables a greater degree of accuracy to be achieved in estimating actual festival expenditure (Breen et al., 2001; Burgan and Mules, 1992; Dwyer et al., 2001; Faulkner and Raybould, 1995; Jackson et al., 2005; Long and Perdue, 1990; Tyrrell and Johnston, 2003). For example, Long and Perdue's (1990) study of a rural arts and crafts festival found that 74.9% of spending by respondents was incurred outside of the host community. Based on this finding they argued that the economic impact assessment of festivals could be overestimated because only part of visitors' total

spending occurs in the host community. In this case the actual impact of participant's expenditure is a function of the ratio of participants resident in the host community to participants who reside in other areas.

A study by Dwyer et al. (2001) included the amount of spending by event organizers, participants and media, and visitors in estimating event-related expenditures. Their study differs from other studies which consider visitor expenditure as the primary source of economic benefits accruing to the host community. Dwyer et al.'s study has similarities to a study by Tyrrell and Johnston (2003) which recognized the need to differentiate between a range of potential sources of festival expenditure including spectators, players/competitors, volunteers and contributors, the media/umpires/other attendees, the host and major sponsors, and exhibitors/vendors. In addition, Tyrrell and Johnston (2003) stated that more precise investigation of the sources of the expenditure, the geographical starting point of the expenditure, the destination or end point of the expenditure, and the cause for expenditures can reduce errors in estimating economic impacts.

In Breen et al.'s (2001) study, the mean scores on five categories of participants' expenditure at a local festival were estimated using both a diary method and the recall method. The data generated by each method was then compared. Respondents who used the diary method had higher mean scores than those calculated by the recall method in all expenditure categories. In addition, their study found that there were significant differences between the mean value from the within-group interview and the mean value from other methods. Differences in mean values of expenditure between the two methods were reported among different socio-demographic variables. Interestingly, their results were similar to those of Faulkner and Raybould's (1995) study which attempted to compare visitors' average expenditure between the diary method and the recall method.

Jackson et al. (2005) developed a do-it-yourself kit to produce a more accurate measurement of the economic impacts of local festivals. Their kit included a detailed questionnaire to garner precise information related to respondent's expenditure and characteristics of the host community in categories such as export income, import replacement, and income redistribution within the region. Jackson et al. (2005) concluded that use of a festival kit of this type would lead to a reduction in misleading data and more precise results.

The third and smallest area of research into expenditure studies have investigated factors affecting the size of visitors' expenditure using a range of advanced statistical methods including the OLS (ordinary least squares) regression model (Rao, 2001) or using both an OLS regression model and a logistic regression model (Thrane, 2002). In a study undertaken in two villages in India Rao (2001) identified several factors that could affect a family's festival expenditure using the OLS regression model. One major finding was that the level of expenditure of participating households was related to education level, the number of young children, and the number of girls of marriageable age. The study also reported that households that spent more on the festivals often had a higher social status and were more likely to have access to greater opportunities for private benefits such as lower food prices and more invitations to meals.

Rao's (2001) study also found that a family's spending on village festivals was closely connected to Indian customs which consider expenditure on festival participation to be a social investment or donation. The study concluded that expenditures on local festivals, at least in this study, may vary according to residents' social status. Based on the findings of Rao's study it is apparent that festival expenditure may be influenced by cultural connotations or obligations in addition to the motivations previously identified

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