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Fotiadis, Anestis and Williams, Russell Blair

Zayed University, Zayed University

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“TiCoSa” a 3d matrix conceptual model to investigate visitors’ perceptions in an athletic event

Anestis Fotiadis

Zayed University, UAE

Russell Blair Williams

Zayed University, UAE

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Abstract: *Visitor behavior can determine athletic events structure making it an important consideration for managers. In this study visitor behavior is analyzed using a new managerial tool called “TiCoSa – Time, Cost, and Satisfaction Activity Blocks” which permits managers to see the time, cost and satisfaction distribution of visitor activities. Through this tool time periods were classified and used as a means of describing visitor flow and behavior in various time blocks within a day. Expenditure patterns were also identified in relation to specific cost blocks relating to the consumption of preferred products and services. Afterward satisfaction was evaluated for each attribute. The recording of information is achieved by a descriptive data collection instrument which reflects time, satisfaction and cost distribution of visitors’ activities. Data collection will be accomplished by means of a diary-type semi-structured questionnaire which will be administered in face-to-face interviews with visitors. Despite limitations, the present research provides useful suggestions for grouping visitor activities (i.e. based on time distribution analysis of activities), which could constitute a basis for better managerial decision making.*

Keywords: Time and cost, visitor satisfaction, 3D matrix, athletic events.

JEL Classification: D24, C22

Biographical note: Anestis K. Fotiadis is an Associate Professor at Zayed University, College of Communication and Media Science, Abu Dhabi, UAE. His research focuses on event management, rural tourism and sustainable development. Russell Blair Williams is an Associate Professor at Zayed University, College of Communication and Media Science, Abu Dhabi, UAE. He has administrative experience of 10 years as the program coordinator for the Digital Graphic Communication program at Hong Kong Baptist University. His research interests include media consumption and advertising in the digital age. Corresponding author: Anestis.Fotiadis@zu.ac.ae

1 INTRODUCTION

Athletic events industry is growing, attracting thousands of people year-round. Despite this growth, there is still a paucity of literature, especially in terms of visitor behavior. Therefore, this study aims to fill the gap in the literature and improve athletic events management by analyzing the behavior of visitors in a specific context. The understanding of visitor behavior is essential for market analysis (Kawamura, Kurumatani, & Ohuchi, 2004) and it provides useful information for the day-to-day running of athletic event. It can constitute the platform for decision making. In addition, this study aims to identify the factors that contribute to a greater degree of customer satisfaction through the planning of effective marketing strategies. This study is still on going and in the future it will be verified in a baseball event related with a team in Taiwan named E-Da Rihnos by

adopting a new model which we name TiCoSa and which reflect how event guests spend their time, their money and how satisfied they are.

Time blocks were chosen for this study because they capture visitor flow and behavior in time blocks within a day as well as their expenditure patterns (Vassiliadis, Priporas, & Andronikidis, 2013; Chatzigeorgiou & Christou, 2016; Fotiadis, 2018). Expenditure patterns were identified relating to the consumption of preferred products and services through the use of a descriptive data collection tool. Satisfaction was measure with a satisfaction index method. With this instrument we examined what visitors do in a baseball event and when they do it along with how they spend time and where most of their money is allocated during the visit. Time and cost blocks can serve as platform for managerial decision making and for future research it may

assist in the categorization of visitors' activities and expenditures in time blocks within a one-day timeframe.

2 LITERATURE REVIEW

2.1 Visitor behaviour

Studying visitor behavior is not a new phenomenon; it has been in practice since 1928 when Robinson and Melton examined the behavior of visitor in a museum (Andriotis, 2011; Brody & Tomkiewicz, 2002; Yalowitz & Bronnenkant, 2009). Today studying people's behavior has become a common practice (Joo, Kang, & Moon, 2012; Vassiliadis et al., 2013; Yalowitz & Bronnenkant, 2009; Mensah & Mensah, 2018), which can be attributed to the useful information it provides to site managers regarding consumer preferences (Carbonell, Rodríguez-Escudero, & Pujari, 2009; Griffin & Hauser, 1993; Tsai & Chung, 2012). However, analyzing human behavior is a challenging task which involves searching for patterns of behavior among numerous different types of activities exerted by different individuals in different time-space locations (Birenboim, Anton-Clavé, Russo, & Shoval, 2013; Fotiadis, Huan, & Costantino, 2013). Researchers have used various techniques to analyze visitor's behavior such as behavioral maps (Birenboim et al., 2013), time tracking (Yalowitz & Bronnenkant, 2009), radio-frequency identification (Tsai & Chung, 2012) and analyses of the behavioral impact of weather conditions (Joo et al., 2012).

Event management involves studying the intricacies of the brand, identifying the target audience, devising the event concept, planning the logistics and coordinating the technical aspects before actually launching the event (Arcodia & Reid, 2005; Berridge, 2007; Capriello & Rotherham, 2011; Chalip & Leyns, 2002; Chatzigeorgiou et al., 2009; Knott, Fyall, & Jones, 2015; Werner, Dickson, & Hyde, 2015; Spyridou, 2017). Post-event analysis and ensuring a return on investment have become significant drivers for the event industry. The recent growth of festivals and events as an industry around the world means that the management can no longer be ad hoc. Events and festivals, such as the Asian Games, have a large impact on their communities and, in some cases, the whole country. The industry now includes events of all sizes from the Olympics down to a breakfast meeting for ten business people (Christou, 2010; Fotiadis & Vassiliadis, 2012; Lee, Lee, & Park, 2014; O'Halloran, 2014; Vassiliadis & Fotiadis, 2014; Samy, 2016; Ma et al., 2017). Many industries, charitable organizations, and interest groups will hold events of some size in order to market themselves, build business relationships, raise money or celebrate.

Sport marketers have long sought to better understand the factors that influence people to attend sporting events. It is expected that understanding factors that affect the consumption of sport will improve the efficiency of marketing communication between service providers and consumers, and, for that matter, possibly influence the entire marketing program of a sport organization. Attracting people to the stadium or ballpark not only increases ticket revenues, but increases supplementary revenue sources, such as parking, concessions and merchandise. Thus, understanding the factors that affect sport consumer behavior can have both

direct and indirect benefits for the sport organization (Cunningham & Kwon, 2003).

2.2 TiCosa (Time, Cost and Satisfaction Activity Blocks)

Time blocks, pioneered by Vassiliadis et al. (2013), is a tool used to gather information about visitor flow and behavior in various time blocks within a day. In other words, time blocks present a time-based analysis of activities undertaken by visitors from the time of their arrival until their departure. Time diaries constitute the basis of time use analysis by recording as it happens all the activities a person engages in within a given day (Robinson, 2011; Vaara & Matero, 2011; Chatzigeorgiou & Simeli, 2017). Analyzing visitor behavior on a time basis is increasingly attracting interest among researchers (Kawamura et al., 2004; Vaara & Matero, 2011; Christou, 2015), however few studies have been conducted in the field related to leisure, marketing and tourism (Vassiliadis et al., 2013; Nella & Christou, 2016).

Figure 1: Time Block Activity Matrix

		Benefit Indicator	
		Low	High
Participation Intensity	High	Motivational Activities (Attract people – Low profits)	Beneficial Activities (Benefit Theme Park)
	Low	Indifferent Activities (Neither Favor nor Purchase)	Promising Activities (Low attractiveness – High Profits)

Time blocks analysis map the activities visitors engage in by developing a time block activity matrix (TBAM) (Grönroos, 2000; Sigala & Christou, 2006; Lovelock & Wirtz, 2011). The matrix categorizes visitor's activities into four groups namely "beneficial", "motivational", "promising" and "indifferent" (Vassiliadis et al., 2013). The first dimension, "beneficial," includes activities that benefit the theme park. The "motivational" dimension includes activities that attract many participants, but relatively low amounts of money are spent. The "promising" dimension includes activities that involve few participants, but a large amount of money is spent. The "indifferent" dimension includes activities that visitors neither favor nor purchase. These activities attract few participants and a small amount of money is spent. (Vassiliadis et al., 2013; Nella & Christou, 2016) suggested that marketing planning and decision making should be based on the information provided by TBAM.

Vassiliadis et al. (2013) created a "Time block activity matrix" which could help ski managers with decision making. As we can see in Figure 1 time and cost attributes are evaluated about participation intensity and benefit indicator. Time and cost block activity matrix is separated in four categories:

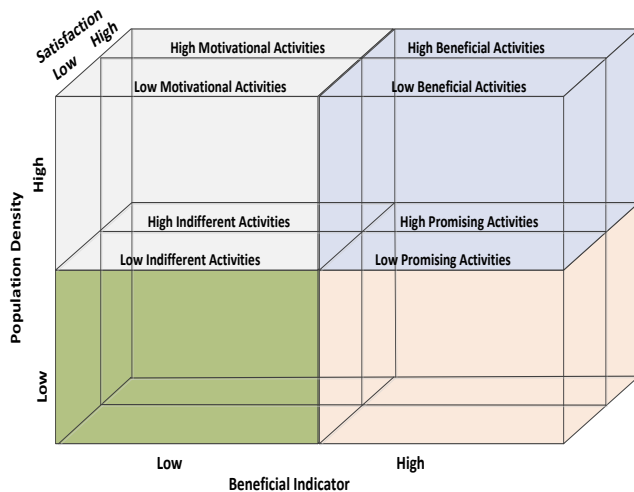
According to their model activities are separated in four different categories:

- **Motivational Activities.** This type of activities has high participation intensity and low profits. If attributes are

in this category, managers should examine the impact of a future price increase. Usually a small increase won't affect participation intensity, but it will increase profits significantly.

- **Indifferent Activities.** This type of activities has low participation intensity and low profits. If attributes are in this category, managers should think to stop these activities. Usually these activities have negative impact on profits, so it is very important to investigate if it is worthwhile keeping these attributes.
- **Promising Activities.** This kind of activity is the one marketers should focus on more. Since these activities have high profits, they should be treated carefully so participation intensity will increase. Of course, it is important for theme park managers to scan if a marketing investment is worthwhile for these activities.
- **Beneficial Activities.** These activities constitute the competitive advantage of the theme park. They provide high profits since they have high participation intensity and high profits. Theme park managers should maintain these activities.

Figure 2: TiCoSa Model



Although this motive is useful for managers it can be improved. Let's use an example. Let's say that we have an activity in a sport event such as "visiting cafeteria". If this activity has high participation density and high beneficial benefits it would be consider as a beneficial activity for managers. How about satisfaction? When somebody is visited a very crowded place usually feels dissatisfaction. That means that probably revision intension for cafeteria will be low and worth of mouth advertisement too. How can manager know about this problem and deal with it? One solution can be our proposed 3d Matrix called TiCoSa. As we can see in figure 2, we add one more important factor. Satisfaction can be the third dimension on this matrix. In this case we have eight different options.

- **High Motivational Activities.** This type of activities has high participation intensity, high satisfaction but low profits. If attributes are in this category, managers should examine the impact of a future price increase. Usually a small increase won't affect satisfaction and it won't affect participation intensity but it will increase profits significantly.

- **Low Motivational Activities.** This type of activities has high participation intensity, low satisfaction and low profits. In this case managers should examine carefully what is the problem and customers feel dissatisfied because otherwise participation intensity will start to decrease. If they find the root of the problem, they can find solution which will increase levels of satisfaction and profits.
- **High Indifferent Activities.** This type of activities has low participation intensity and low profits but high satisfaction. If attributes are in this category, managers should think how to increase participation intensity. Of course, they should take extra care on the roots of satisfaction (maybe customers are satisfied because there are not so crowded). Alternatively, managers could think to stop these activities.
- **Low Indifferent Activities.** This type of activities has low participation intensity, low satisfaction and low profits. If attributes are in this category, managers should think how to increase participation intensity. If attributes are in this category, managers should think to stop these activities. Usually these activities have negative impact on profits, so it is very important to investigate if it is worthwhile keeping these attributes.
- **High Promising Activities.** This kind of activity is the one marketers should focus on more. Since these activities have high profits and high satisfaction, they should be treated carefully so participation intensity will increase. Of course, it is important for theme park managers to scan if a marketing investment is worthwhile for these activities.
- **Low Promising Activities.** This kind of activities have high profits, low satisfaction and low population intensity. Managers should make the appropriate strategies to improve satisfaction and population intensity levels.
- **High Beneficial Activities.** These activities constitute the competitive advantage of the theme park. They provide high profits, high satisfaction and high participation intensity. Managers should maintain these activities in the same level or even improve them as much as they can.
- **Low Beneficial Activities.** These activities provide high profits, high participation intensity but low satisfaction. This is a warning signal for managers. Dissatisfied customer will decrease participation intensity in the future and they will feel that value of money is not the appropriate for this type of activities. Mangers should maintain these activities, but they should find ways to increase satisfaction levels. For example, maybe they can have more employees at the restaurant, so customers will receive faster.

Based on Vassiliadis et al. (2013), TBAM model, researchers can evaluate activities on a sport event. First participation intensity and benefit indicator must be calculated and then a TiCoSa activity matrix can be created.

Participation Intensity (PI): can be found if we calculate the percentage (%) of the visitors that select the activity in the time block. For example, in a research by Fotiadis et al. (2013) for theme parks in Taiwan 290 of the 611 visitors in attribute one of time block or 47.5% or 0.475 of the visitors

wake up in the morning to come to E-Da theme park in the time block 08.00 am - 10.00 am.

$$PI = \frac{XVA\alpha}{XVA} = \frac{290}{611} = 0.475$$

Where:

α is one of the Time blocks "08.00 am – 10.00am"

A = Activity or attribute

XVA = Visitors selecting A (total number of visitors that selected A in all time blocks)

XVA α = Visitors select the α in A

Benefit Indicator (BI): Can be found if we first calculate the total profit for each attribute

$$TPA = (MP1*Q\beta1) + (MP2*Q\beta2) + (MP3*Q\beta3) + (MP4*Q\beta4) + (MP5*Q\beta5) + (MP6*Q\beta6) = (455 * 50) + (150 * 56) + (400 * 4) = 35,550$$

Where:

β is on the cost blocks "100 NT\$ - 300 NT\$"

TPA = Total Attribute Profit

MP = Median Profit

Q β = Quantity for each time cost

Further on we can calculate the Benefit Indicator % for each attribute if we divide the TPA (Total Profit) for each attribute to total profits for all the attributes. For example, at Fotiadis et al. (2013) TPA for attribute 1 is 35,550 NT\$ while total profit for all the attributes is 1,754,150 NT\$.

$$BI = \frac{TPA}{TPA\ Sum} = \frac{35,550}{1,754,150} = 0.020$$

Satisfaction can be found with a 10-points scale related with each attribute. Since we have found the three different dimensions Participation Intensity, Benefit Indicator and Satisfaction we can now create a Time, Cost and Satisfaction (TiCoSa) Block Matrix.

5 CONCLUSIONS

In this research we mention to introduce a news managerial tool entitled "TiCoSa – Time, Cost, and Satisfaction Activity Blocks". Based on that tool several very interesting results can be flourish since visitor flow and behavior is examined. This model is a new instrument and it can improve event management decision making. As we mention before this is an ongoing project, so the above conceptual model will be tested and verified on a real event in a baseball event in Taiwan. Main objective is to test if a three-dimensional model is more successful that a two-dimensional model. Moreover, it will be examined if this conceptual model can be more developed by adding more dimensions to the model. Event managers will be able to use the model and they could gain several information related with participation, benefit indicator and satisfaction and what is their combinational results.

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