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ESTIMATING THE IMPACT OF SHOWROOM ENTERTAINMENT ON THE HOURLY
SLOT GAMING VOLUME OF A LAS VEGAS HOTEL-CASINO

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Estimating the Impact of Showroom Entertainment on the Hourly Slot Gaming Volume of a Las Vegas Hotel-Casino

ABSTRACT

Along with the emergence of mega casino-resorts in the gaming industry, researchers have attempted to estimate the indirect gaming contributions of non-gaming casino amenities such as showroom entertainment and restaurants. However, the daily data of aggregate gaming volumes analyzed in previous gaming research did not allow exploring transient gaming volumes associated with casino amenities during a much narrower range of time periods (i.e., hourly). The current investigation addresses this limitation by proposing a model to examine the relationship between showroom headcounts and hourly slot gaming volumes for the hours falling adjacent to the show's performance time. Considering a major investment in showroom entertainment at many casinos, the current study will help casino operators evaluate the showroom's slot gaming contribution.

Key Words: Showroom Entertainment; casino marketing; casino management; operations analysis

1. Introduction

Bingo, poker and non-gaming amenities such as showroom entertainment and restaurants are traditionally employed to generate casino traffic and thus increase slot and table gaming volumes (Christiansen and Brinkerhoff-Jacobs, 1995; Lucas, Dunn, and Kharitonova, 2006; Lucas and Santos, 2003; Roehl, 1996; Suh and Lucas, 2010). These amenities are believed to draw play that would otherwise be absent (Christiansen and Brinkerhoff-Jacobs, 1995; Lucas, Dunn, and Kharitonova, 2006; Lucas and Kilby, 2008; Lucas and Santos, 2003; Roehl, 1996; Suh and Lucas, 2010). However, this conventional theory has been merely based on anecdotal claims until recently. Some researchers noted that lack of empirical evidence regarding the indirect gaming contributions of casino amenities could be due to the complexity of disentangling individual casino amenities from other simultaneous influences that affect gaming volumes (Lucas and Kilby, 2008; Kilby, Fox, and Lucas, 2004). Along with the emergence of mega casino-resorts in the gaming industry over the years, the traditional role of casino amenities as a complement to gaming has received increasing attention from researchers. Several researchers have developed statistical models to estimate gaming volumes associated with various casino amenities (i.e., Lucas, Dunn, and Kharitonova, 2006; Lucas and Santos, 2003, Roehl, 1996; Suh and Lucas, 2010). Casino amenities examined in their studies include showroom entertainment, restaurants and bingo operations.

Although the relationships between casino amenities and gaming volumes have been tested empirically, the data of daily aggregate gaming volumes or self-reported gaming budgets examined in the aforementioned research do not allow exploring transient gaming volumes during a much narrower range of time periods. For example, variations in gaming volumes for a few hours after the bingo sessions or the shows cannot be captured through such data. Since not

all casino amenities operate 24 hours, modeling the effect of casino amenities with limited operating hours on the entire day's gaming volume may lead to less accurate estimates. In fact, a review of the literature involving estimation of the casino amenities' indirect gaming contributions suggested that future research examine gaming volumes on an hourly basis (Lucas, Dunn, and Kharitonova, 2006; Suh and Lucas, 2010). To the best of the author's knowledge, hourly gaming volume data have rarely been used in previous gaming research.

This study will investigate the variations in hourly slot gaming volume associated with showroom entertainment. Considering heavy capital investment in showroom entertainment at many casinos, precise estimation of the showroom's indirect gaming contribution is critical in evaluating return on investment (Suh and Lucas, 2010). This research will extend previous work on gaming volume prediction by examining the relationship between showroom entertainment and hourly slot volume. As slot volumes vary throughout the day, prediction of hourly slot volume could better capture patterns in slot gaming volumes before, during and after the show. Furthermore, the prediction model of hourly slot volume advanced in the current study can be applied to measuring the indirect slot gaming contributions of other types of casino amenities.

2. Literature Review

2.1. Showroom Entertainment in Las Vegas

"Gaming is a major part of why people come to Vegas, but it's no longer the dominant reason. There is so much more here than just casinos." Bryan Allison, vice president of marketing at Vegas.com, an online travel and concierge service (Vora, 2007, 9).

“People today come to the Bellagio or MGM Grand for much more than gambling. Sixty-two percent of companywide revenues will be from non-gaming sources this year, and at many of our resorts it will be significantly higher.” Terry Lanni, chairman and chief executive of MGM Mirage (Banay, 2006, 15)

As noted above, casinos in Las Vegas appear to attract a diverse customer base by offering a wide range of entertainment choices. According to the 2009 Las Vegas Visitor Profile Study, 40% of survey respondents indicated that their primary purpose for current trip was vacation or pleasure, while 13% of respondents stated that gaming was the main reason to visit Las Vegas (Las Vegas Convention and Visitors Authority [LVCVA], 2010). Furthermore, the respondents whose primary purpose of Las Vegas trip was vacation or pleasure cited entertainment and show as the most important reason of trip (LVCVA, 2010). In fact, 64% of Las Vegas visitors attended shows during their stay in Las Vegas (LVCVA, 2010).

The recent influx of celebrity chef restaurants, multimillion-dollar shows, boutique retailers, nightclubs, and spas, has changed the revenue mix for the Las Vegas Strip casinos significantly (Vora, S., 2007; Banay, 2006). According to the 2009 Annual Gaming Abstract, 61.3% of total revenue in 2009 at the Las Vegas Strip’s various casino resorts with gaming revenue of \$1million and over was from non-gaming operations including lodging, food, entertainment, and beverage (Nevada Gaming Control Board [NGCB], 2009). Gaming accounted for 38.7% of total revenue in 2009 (NGCB, 2009). For comparison, casinos depended on gaming for 48% of total revenue in 1999, and the remainder came from non-gaming operations (NGCB, 1999).

With the trend toward integrated casino resorts in Las Vegas, many casinos on the Las Vegas Strip have made major investments in long-running shows such as Cirque du Soleil and headliner shows that are presented in custom-built theaters. Examples include MGM Mirage's \$165-million Cirque du Soleil show, "Ka", Caesars Palace's Celine Dion show in a \$95-million theatre, a \$14-million show at the Mirage casino, "Beatles", and "Le Reve" at a \$110-million theater in Wynn Las Vegas (Goldman, 2004; Nakashima, 2006; Palmeri, 2004). Traditionally, showrooms are operated as a complement to gaming under the assumption that the clientele attracted by the shows is also likely to play casino games (CasinoMan, 2003; Chistiansen and Brinkerhoff-Jacobs, 1995; Samuels, 1999; Tiscali Music, 2003). With this assumption, showrooms in many casinos are operated at a marginal profit or a loss (Atlas, 1995; CasinoMan, 2003; Lucas and Kilby, 2008; Yoshihashi, 1993).

Although showroom entertainment as a draw for desirable players has been a conventional view, during recent years, casino operators, especially those of the Las Vegas Strip casinos, appear to be more concerned than ever with generating appropriate returns on their showroom entertainment investments. This is evidenced by ever-increasing ticket prices for shows and closure of shows with poor ticket sales. In 2008, Las Vegas Advisor which tracks ticket prices for Las Vegas shows every year reported that ticket prices have been raised for seven years in a row (Weatherford, 2008). Additionally, the average ticket price for production shows excluding tour headliners has increased by 11% from 2006 to 2007 (Vrana, 2007). In 2006, two Tony-winning shows, "Hairspray" at the Luxor hotel-casino and "Avenue Q" at Wynn Las Vegas, were closed several months after their debuts due to disappointing ticket sales (Nakashima, 2006; Stutz, 2006).

2.2. The Relationship between Gaming and Non-Gaming Volumes

A review of the gaming volume prediction literature revealed several studies involving estimation of the indirect gaming contributions of casino amenities (i.e., Lucas, Dunn, and Kharitonova, 2006; Lucas and Santos, 2003; Roehl, 1996; Suh and Lucas, 2010). Roehl (1996) analyzed self-reported data from Las Vegas area residents to examine the relationship between their patronage of casino amenities and annual gaming budgets. The study produced a regression model consisting of seven variables for predicting individual players' casino spending. The variables were respondent's gender, marital status, education level, and patronage of coffee shop, gourmet restaurant, and large-/small-scale show. All these predictors were statistically significant, and the model produced the R^2 of 0.23.

Lucas and Santos (2003) tested a model using a time-series regression approach, where the relationship between casino-operated restaurant and daily slot business volumes was the focus of interest. In their study, restaurant business volumes were expressed in terms of daily food covers (headcounts). Using the daily slot volume data from a Las Vegas neighborhood casino and two Midwestern riverboats, they found the positive and statistically significant model effect of the food cover variable on daily slot volumes in each of the three property models. The regression models tested in their study produced an adjusted R^2 ranging from 0.83 to 0.93.

Lucas, Dunn, and Kharitonova (2006) examined the effect of bingo operations on the aggregate daily slot volumes of two hotel casinos, one in Southern California and the other in Las Vegas, Nevada. They advanced three models to estimate the daily slot volumes associated with bingo headcounts. One of the three models narrowed its gaming volume prediction to the slot volume generated by low denomination slots with a wagering unit of less than \$1.00. The

other two models predicted the property's overall aggregate slot volumes without limiting denominations. In all three models, however, the bingo headcount variable failed to produce a positive and statistically significant model effect on slot gaming volumes. Contrary to these findings, Lucas and Brewer (2001) found a positive and statistically significant effect of bingo headcounts on slot gaming volumes using the data from a Las Vegas repeater market casino. Lucas, Dunn and Kharitonova (2006) suspected that inconsistent results between the two studies were likely due to differences in the operating and marketing conditions among casinos.

2.3. The Impact of Showroom Entertainment on Gaming and Non-gaming Volumes

Suh and Lucas (2010) estimated the slot and table game business volumes associated with showroom entertainment using the daily performance data from two Las Vegas Strip hotel casinos. Showroom business volumes were expressed in paid showroom headcounts on a daily basis. With an adjusted R^2 ranging from 0.70 to 0.92, the authors found a positive and statistically significant relationship between showroom and gaming volumes in three of the four models for daily gaming volume prediction. However, the estimated incremental gaming revenue associated with showroom headcounts was not sufficient enough to claim showroom entertainment as a complement to gaming and justify major investments in showroom entertainment. The first property's showroom produced 6.8% of total gaming win during the sample period while the second property's showroom produced 4.1% of the same. The authors suggested that future research investigate the effect of showroom headcounts on gaming volumes during the time period falling adjacent to the show time.

With respect to the non-gaming contribution of showroom entertainment, Suh and West (2010) examined the relationship between showroom entertainment and casino-operated restaurant business volumes of a Las Vegas Strip hotel casino. They investigated the entertainment-restaurant relationship using the daily showroom headcount data from a single showroom and the daily revenue data from several restaurants open for dinner at the subject property. Given that the show examined in their study performed twice a day at 7p.m. and 10p.m. during the 226-day sample period, it is natural to assume that showroom traffic could have a positive impact on restaurants, especially those open for dinners. As expected, the authors reported a positive and statistically significant model effect of showroom headcounts on the daily restaurant business volumes ($B = 6.96$, $t = 4.46$, $df = 213$, $p < .0001$). This finding offers the possibility of detecting a positive relationship between showroom entertainment and gaming volumes for the hours falling adjacent to the show.

2.4. Prediction Model for Gaming Volume

The time-series regression approach has been successfully employed in gaming research on predicting daily gaming volumes including gaming volumes associated with casino amenities (i.e., Lucas, 2004; Lucas and Bowen, 2002; Lucas and Brewer, 2001; Lucas, Dunn, and Kharitonova, 2006; Lucas and Santos, 2003; Suh and Lucas, 2010). Gaming volume prediction models typically consist of components that represent holiday effects, daily seasonal patterns and linear trends in the gaming volume data to capture the influences of such components on daily gaming volumes. In some models, variables representing marketing activities such as casino events and direct mail incentives were tested as they were expected to have a positive impact on

gaming volumes (i.e., Lucas, 2004; Lucas and Bowen, 2002, Lucas and Brewer, 2001).

However, few models produced a positive and statistically significant model effect of marketing-related variables on daily gaming volumes. Contrary to the marketing variables, temporal variables played an important role in predicting gaming volumes in almost all models for gaming volume prediction. Specially, major holidays, Fridays and weekends exhibited higher gaming volumes than regular weekdays. These models also demonstrated high predictive power, producing an R^2 as high as .94.

The framework of the gaming volume prediction models was also used in Suh and West (2010) to predict the daily restaurant business volumes associated with showroom entertainment. The researchers tested 19 independent variables representing different days of the week, major holidays, a linear trend in the restaurant revenue data, and daily showroom headcounts, to explain variations in daily restaurant business volumes associated with showroom traffic. Their model produced an adjusted R^2 of 0.84.

2.5. Modeling Hourly Slot Volume

Figure 1 illustrates the proposed model for predicting hourly slot volumes for the hours falling adjacent to the show. It was developed based on the models from prior gaming research on daily gaming volume prediction (i.e., Lucas, 2004; Lucas and Bowen, 2002, Lucas and Brewer, 2001; Lucas, Dunn, and Kharitonova, 2006; Lucas and Santos, 2003; Suh and Lucas, 2010). Compared to the earlier studies' models for daily gaming volume prediction, however, the current study's model was designed to detect hourly variations in slot volumes associated with a casino amenity, in this case, showroom entertainment. The use of a narrower

measurement interval is in the same vein as the examination of daily revenue data from dinner-only restaurants by Suh and West (2010). Suh and West (2010) examined restaurants open for dinner instead of all the restaurants at a subject property as the dinner-only restaurants' operating hours corresponded to the show performance time. Other variables in Figure 1 represent different days of the week, major holidays, a linear trend in the slot volume data, and casino events hosted by the subject property. These variables were included due to their potential effects on slot gaming volumes.

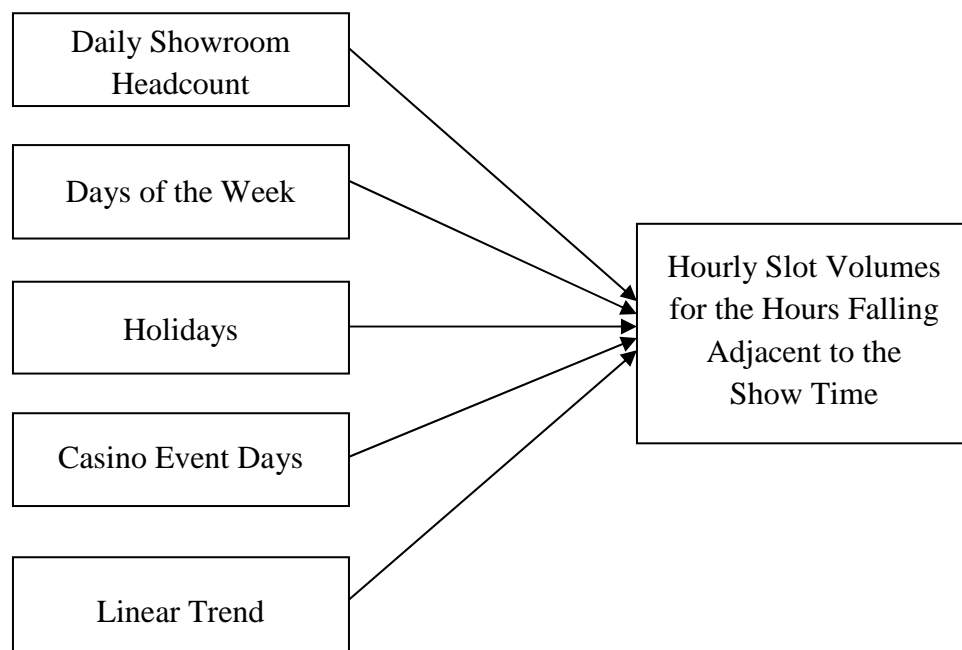


Figure 1. Hourly Slot Volume Prediction Model

2.6. Hypothesis

A directional hypothesis was advanced, considering the traditional role of showroom entertainment as a complement to gaming and a positive entertainment-gaming relationship

observed in Suh and Lucas (2010). The hypothesis for the current investigation states that a positive relationship exists between showroom headcounts and hourly slot gaming volumes. A one-tailed hypothesis test will be conducted at the .05 alpha level.

3. Methodology

3.1. Data and Analysis

Daily showroom headcounts and slot volume data for the hours falling adjacent to the show time will be obtained from a hotel casino located on the Las Vegas Strip. A time-series regression approach will be used to predict hourly slot volumes associated with showroom traffic.

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