

1-1-2008

## The upscaling of Las Vegas: An examination of increased gaming revenue

Dominik Kuna  
*University of Nevada, Las Vegas*

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THE UPSCALING OF LAS VEGAS: AN EXAMINATION  
OF INCREASED GAMING REVENUE

by

Dominik Kuna

Bachelor of Science in International Business  
Kean University  
Union, New Jersey  
2004

A thesis submitted in partial fulfillment  
of the requirements for the

**Master of Science in Hotel Administration**  
**William F. Harrah College of Hotel Administration**

**Graduate College**  
**University of Nevada, Las Vegas**  
**August 2008**

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**Thesis Approval**  
The Graduate College  
University of Nevada, Las Vegas

July 18, 2008

The Thesis prepared by

Dominik Kuna

Entitled

The Upscaling of Las Vegas: An Examination of Increased  
Gaming Revenue

is approved in partial fulfillment of the requirements for the degree of

Master of Science in Hotel Administration

Examination Committee Chair

Dean of the Graduate College

Examination Committee Member

Examination Committee Member

Graduate College Faculty Representative

## ABSTRACT

### **The Upscaling of Las Vegas: An Examination of Increased Gaming Revenue**

by

Dominik Kuna

Dr. Curtis Love, Examination Committee Chair  
Interim Chair/Associate Professor  
University of Nevada, Las Vegas

The purpose of this study was to examine how popular luxury has become a driver of key volumetric which has resulted in increased Strip Gaming Revenue. This study examined three independent factors: (a) Strip Visitor Volume, (b) Strip Hotel Occupancy Percentage, and (c) Average Daily Rate (ADR) of Strip hotel rooms. The independent factors are influential on the dependent variable of Strip Gaming Revenue. This relationship has economical and psychological impacts on the transformation and evolution which has been taking place mostly on South Las Vegas Boulevard—The Strip. Secondary data were collected from the Las Vegas Convention and Visitors Authority (LVCVA) from January 2001 through June 2008 for the purpose of this study. The hypotheses related to the relationship among the variables were supported through multiple regression analysis, and a model showing the relationship was developed.

On an average monthly basis, Strip Gaming Revenue during the period was about \$454 million; Strip Visitor Volume, 2.1 million; Strip Hotel Occupancy, 92.0%; and ADR, \$124.55. Analysis indicated that an increase of one person per month adds about

\$65 to Strip Gaming Revenue; 1% in Strip Hotel Occupancy adds nearly \$3.3 million; and an increase in ADR of \$1 adds more than \$3.1 million to Strip Gaming Revenue per month. These findings support the expansion of luxury accommodations on the Las Vegas Strip.

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## ACKNOWLEDGMENTS

I would like to thank those individuals who provided a great deal of assistance that enabled me to complete this thesis successfully. First, my chair, Dr. Curtis Love, helped tremendously with his advisement, his reading through and editing, and his knowledge about the convention industry in Las Vegas. Next, Dr. Carola Raab, a committee member, was helpful in locating the data, processing it, getting things moving, and guidance with the methodology. In addition, she always made time to meet with me. Dr. Pearl Brewer, Executive Director of the Graduate Studies Program of the William F. Harrah College of Hotel Administration, offered valuable suggestions. Finally, Dr. John Schibrowsky made sure that my model was accurate and worked and provided his perspective from the field of marketing. To all of you, I give my deep thanks and eternal gratitude.

## CHAPTER 1

### INTRODUCTION

#### Background

Las Vegas. Sin City. It is “beyond real life” (Twitchell, 2002, p. 218). No other city conjures the glitz and glitter, the gaming, the nightlife, the luxury of Las Vegas. It is an oasis in the middle of the desert, a gaming destination resort primarily for adults, but also for families. Las Vegas is a place without day or night, a 24/7 town without clocks or windows. At its heart lies a three-mile stretch of neon-lit splendor lined with mega-hotels and casinos—the Las Vegas Strip. The Strip is based on architectural, marketing, and economic theories with input from an evolving American culture: “wide road, low building, huge sign” (Twitchell, 2002, p. 222).

The United Nations World Tourist Organization (UNTWO, 2007) ranked the United States third in the number of tourists visiting with a total of 51.1 million coming to America in 2006. Within the United States, the “Neon Trail” known as the Las Vegas Strip with 31 million visitors ranked second to Times Square in New York City in Forbes.com’s (2008) ranking of the most visited places in the United States. While gambling remains the primary activity, The Strip now also hosts lavish production shows, world-class art exhibits, sybaritic spas, celebrity chefs in awesome restaurants, and a hip club scene. Daily, Las Vegas reinvents itself as America’s ultimate playground. Its tall,

pervasive neon of the olden days now coexists with vast digital signs, distracting drivers plodding along on South Las Vegas Boulevard—The Strip.

### A Brief History of Las Vegas

Las Vegas, in the high desert of southern Nevada, has been inhabited for thousands of years. Relics from the Anasazi and Paiute tribes attest to this fact. Rafael Rivera, a scout, was the first of European descent to have reported in 1829 about Las Vegas, literally “The Meadows,” a valley with an abundant water supply and growing grasses in the middle of the desert. From the mid-1850s to the end of the 19<sup>th</sup> century, Las Vegas became an oasis, inhabited primarily by Mormons, serving travelers between the Midwest and California. In 1864, Nevada was admitted as the 36<sup>th</sup> state; shortly after that, precious minerals were discovered, and boomtowns emerged yielding Nevada’s nickname, “The Silver State.” Additionally, at the end of the 19<sup>th</sup> century, the State sold land cheaply, and agriculture became the leading source of revenue from 1885-1905. The completion of a railroad linking Los Angeles and Salt Lake City turned Las Vegas into a railway stop, and the City of Las Vegas was born in 1905 (LasVegasNevada.gov, 2007).

The modern history of Las Vegas began as early as 1911, when divorce laws in Nevada were liberalized. The “dude ranches” begun as havens for women seeking divorces were the forerunners of Strip hotels. In 1931 in the middle of the Great Depression, however, two monumental occurrences took place to transform Las Vegas from a sleepy small city of 5,000 to a major tourist attraction. First, construction began on Hoover Dam, increasing the population with construction workers and services for them. Second, gambling was legalized in the state of Nevada. By the end of World War II in

1945, travel and tourism had become the number one revenue producer in Las Vegas, and in 1957, the first topless show appeared on The Strip (LasVegas Nevada.gov, 2007).

With more than 64,000 residents, by 1960, Las Vegas had 22% of Nevada's population on just 0.02% of the state's land mass. It was during the 1960s that industrial magnate Howard Hughes began to build hotels and started the transformation of Las Vegas from a mob-dominated barely legal gambling environment to a big-business, corporate money-maker. Over the next three decades, Las Vegas saw unprecedented growth, culminating in the implosion of the Dunes Hotel/Casino in 1993. Twitchell (2002) contended that the underlying belief in Las Vegas was and is to "create the imagery that humans will flock to see and will stay around long enough to be fleeced . . . the connection between luxury and entertainment is intimate and necessary" (p. 225). The down-with-the-old-in-with-the-new philosophy and activity begun by the implosion of the Dunes led to the issue of the feasibility of luxury tourism which is the overall topic of this study.

### Problem Statement

The Global Development Research Center (GDRC) reported that tourism is the largest economic sector internationally in terms of earnings and number of people employed (GDRC, 2008). This is also true in Las Vegas. But how long can the current growth last? According to the International Luxury Tourist Market (ILTM), the group of tourists comprising the top 3% of spenders, regardless of their income, spend about 20% of all tourism expenditure, categorizing them as luxury tourists (Ikkos, 2004). Of the 40 million visitors to Las Vegas, then, about 1.2 million (3%) fall into the category of luxury

tourists. The rate of growth in the luxury market in Las Vegas at this time, however, is enormous. The problem is that luxury tourism in Las Vegas may or may not be feasible at its current rate of growth. As Las Vegas tries to transform itself into a purveyor of luxury, it may lose its ranking as the second most popular tourist attraction in the United States.

### Purpose of the Study and Methodology

As Las Vegas becomes more of a luxury destination, revenue on The Strip has increased from gaming. The question is, however, what influences gaming revenue? Secondly, can this revenue be sustained and/or increased over time?

The purpose of this study is to test hypotheses relating to the feasibility of luxury tourism in Las Vegas. These hypotheses are:

H<sub>1</sub>: There is a significant positive relationship between Strip Visitor Volume (SVV) and Strip Gaming Revenue (SGR).

H<sub>2</sub>: There is a significant positive relationship between Strip Hotel Occupancy Percentage (SHO) and Strip Gaming Revenue (SGR).

H<sub>3</sub>: There is a significant positive relationship between Average Daily Rate (ADR) and Strip Gaming Revenue (SGR).

From the hypotheses, a model was developed to indicate the relationship of three variables—(a) Strip Visitor Volume (SVV), (b) Strip Hotel Occupancy Percentage (SHO), and (c) Average Daily Rate (ADR)—with Strip Gaming Revenue (SGR). To develop such a model, internal proprietary data were collected from the Las Vegas Convention and Visitors Authority (LVCVA). These data spanned the period of January



2001 through June 2007 (LVCVA, 2008b). The data were then analyzed in relation to the hypotheses.

### Significance of the Study

Luxury, a social construct, is defining American culture. Twitchell (2002) claimed that American culture has two threads. The first thread says, “make your own bundle, make it quick, make it count, and do it by being lucky” (Twitchell, 2002, p. 216). The older, less current thread states, “cooperate, make it slow, get rewarded later, and do it by dint of labor” (Twitchell, 2002, p. 216). It is the contrast, according to Twitchell (2002), between “fence-building farmers and the risk-taking cattlemen, between age and adolescence, substance and style, between savers and gamblers” (p. 216). Las Vegas, especially The Strip, represents a shift in the American Dream.

The consulting firm of Yesawich, Pepperdine, Brown & Russell and Yankelovich, Inc. (YPBR/Y, 2006) identified three critical value constructs among consumers. First, “Self-Invention” is the way people expect to live; as consumers, people are deciding for themselves what they want and gaining control. They quickly reject what does not work for them. This is defined as “Personal Authenticity.” Finally, the third value-related construct, Advantage: Intangibles, can be broken into four somewhat self-defining categories: (a) The Good Life, Redefined; (b) The Affluent Attitude; (c) Out of Time; and (d) The New Certainty Trifecta. Consideration of these constructs is important, especially when thinking about affluent travelers. In fact, YPBR/Y (2006) defined this combination of constructs as “Reality Reloaded” (p. 2).

Clearly, Las Vegas has a future, and it seeks to reinvent itself to maintain its place at the top of the tourist destination hierarchy. What is critical, however, is the ability of Las Vegas not only to remain competitive and profitable, but also to upgrade to a more luxurious destination. The reason is that consumers are becoming more demanding. When they have money to spend, they want to spend it on goods, services, and products that are top quality, selective, and unique—world-class. It is therefore important to understand the micro- and macro-economic influences on gaming revenue.

The consulting firm, Yesawich, Pepperdine, Brown & Russell (YPB&R), reported on the affluent traveler, defined as a person with a minimum annual household income of \$150,000 (YPB&R, 2006). Affluent travelers travel for both business and pleasure, seeking out quality and value in their accommodations. As a result, they are “perfect targets for luxury travel” (p. 7) that includes unique experiences. Moreover, to obtain travel information, the female affluent traveler is more likely assigned the task of data gathering and even decision-making. Consequently, tourist destinations that appeal to women are more likely to win the business of the affluent leisure traveler.

Affluent leisure travelers like to stay in luxury hotels and resorts in attractive locations. Wireless Internet access in the hotel room has become an important factor in attracting the affluent traveler. These visitors also do not appreciate the need for “dressing up,” preferring informality while traveling for leisure. They like large rooms, elegant bathrooms, and lovely grounds along with building “architecture that reflects the surroundings and provides a unique *sense of place*” (YPB&R, 2006, p. 11). Affluent travelers want five-star service and amenities like readily available fine dining, delayed check-out, concierge services, 24/7 in-room dining, and turndown service. Condominium

resorts like the Hilton Grand Vacations Club are also attractive to affluent travelers. Nevada is not currently on the list of top destinations for affluent leisure travelers (YPB&R, 2006).

Every year for the last decade, the Las Vegas Convention and Visitors Authority (LVCVA) has gathered data on visitor spending habits specifically on the Las Vegas Strip. While some analysis has been conducted on these data, the information offers additional value if scrutinized through further analyses. Among these options for analysis is the possibility of looking at certain variables within the data as promising important influences on gaming revenue. This study will produce a model that shows the influence of three variables on gaming revenue: (a) Strip Visitor Volume, (b) Strip Hotel Occupancy Percentage, and (c) Average Daily Rate.

### Context

Nevada is located in the western United States. The seventh largest state with more than 110,000 square miles, it is bordered on the west by California, on the north by Oregon and Idaho, on the east by Utah, and on the south by Arizona. The state is divided into 17 counties (LVCVA, 2008a).

Las Vegas is a city of about 500,000 in Clark County, Nevada, located at the southern tip of the state. Clark County's population hovers around 2 million. Approximately two-thirds of Nevada's inhabitants reside in Clark County. As an example of its size, Clark County School District (CCSD) is now the fifth largest public school district in the nation. To demonstrate growth, in 1992, CCSD was only 14<sup>th</sup> largest. Due to its size and consistently rapid growth, Southern Nevada maintains a huge infrastructure

in both the public and private sectors to support this booming population (LVCVA, 2008a, 2008b).

Maps supplied by the Las Vegas Convention and Visitors Authority (LVCVA, 2008a) tell an important story and demonstrate the relationship of where Nevada is to where Las Vegas is located to the small size and location of The Strip. Figure 1 shows the state of Nevada in its context in the West. Figure 2 is of the Las Vegas metropolitan area. Figure 3 is a map of The Strip, the primary subject of interest for the present study. The Strip, also known as The Strip Corridor, includes properties on South Las Vegas Boulevard and between Valley View Road and Paradise Road (LVCVA, 2008b). Figure 4 is a map of downtown Las Vegas, currently a secondary tourist attraction within the city. This combination of maps enables the reader to understand the geography of Las Vegas. In addition, the impact on tourism of the geography is that to get to Las Vegas, a visitor must fly or drive a great distance.

### Definition of Key Terms

The following terms are defined as they are used in this research project. The definitions of terms come mainly from related literature on the topic of revenue forecasting.

Average daily rate (ADR): Pertaining to hotel rooms, the average rate per day of a hotel room on the Las Vegas Strip (LVCVA, 2008).

Las Vegas Strip: The section of Las Vegas Boulevard that begins at the intersection of Sahara Avenue on the north (Stratosphere Hotel/Casino) and proceeds south past Russell Road as far as Mandalay Bay. The Strip is bounded on the east by

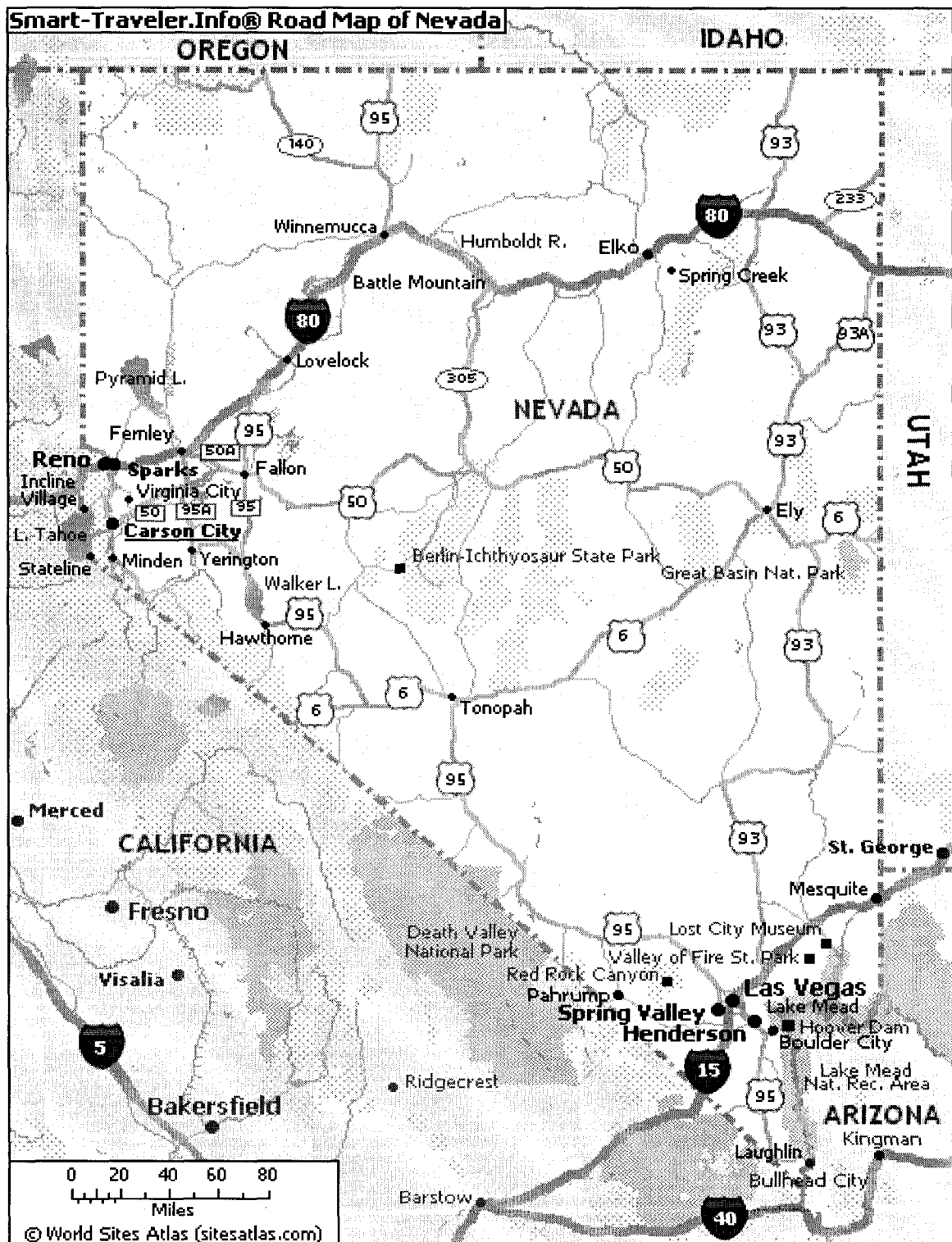


Figure 1. The state of Nevada (Smart-Traveler.com, Inc., 2008).

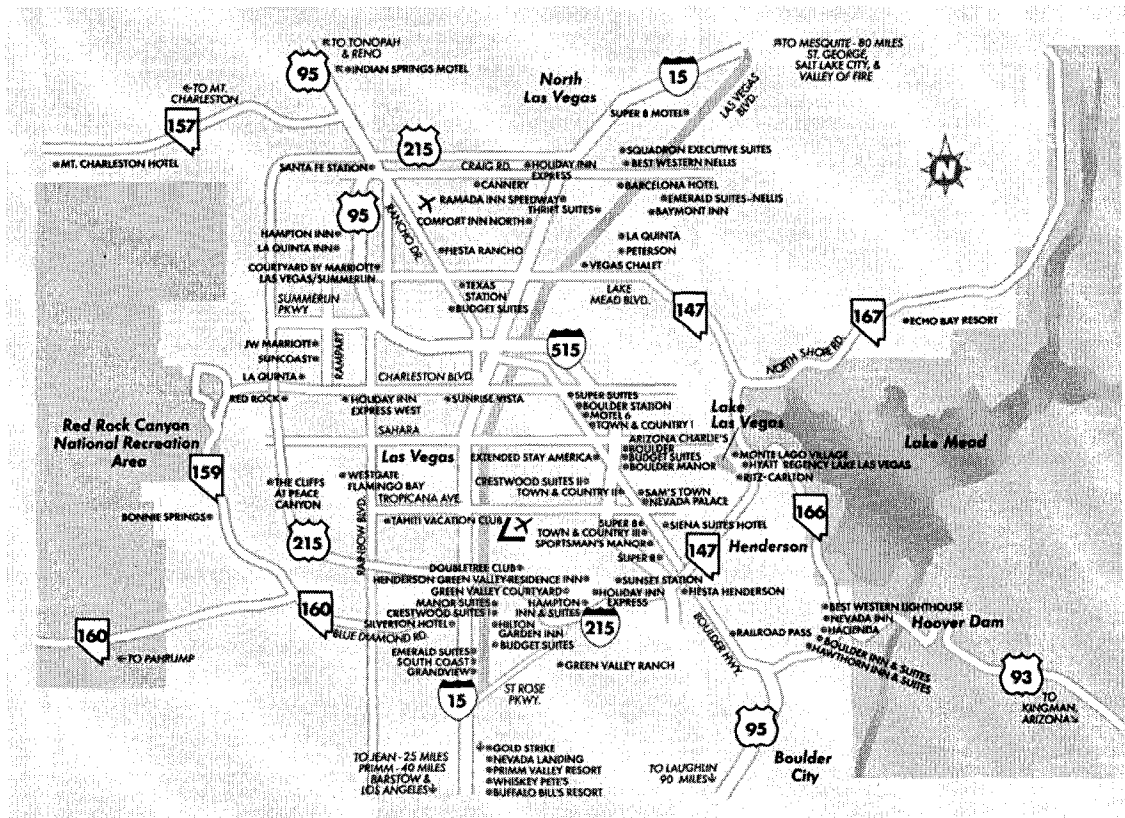


Figure 2. The Las Vegas metropolitan area (LVCVA, 2008).

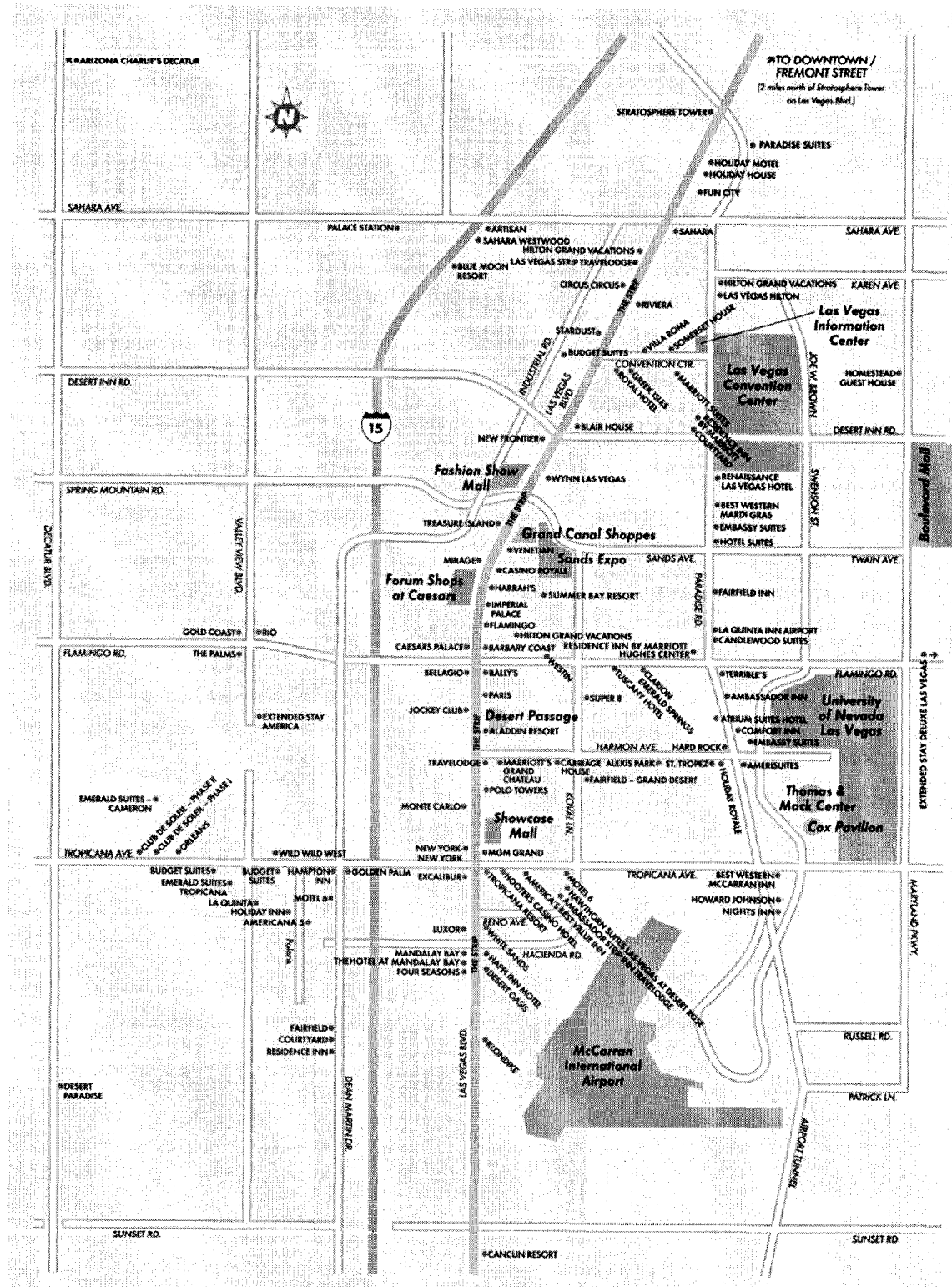


Figure 3. The Las Vegas Strip (LVCVA, 2008).





Paradise Road, thereby including the Las Vegas Hilton and the Las Vegas Convention Center, and on the west by Valley View, thereby excluding the Palms (LVCVA, 2008).

Mega resort: Common term describing large casino/hotels built since 1989. This new era began with the opening of the Mirage in November 1989. Mega resorts are built with larger casinos, generally between 3,000 and 5,000 hotel rooms, and more dining and entertainment facilities than earlier Las Vegas casino/hotels (Frankhouser, 1999).

Price tolerance: A price span within whose boundaries the hotel guest does not change his or her behavior (Hermann, Huber, Sivakumar, & Wricke, 2004).

Revenue forecasting: From a business perspective, revenue forecasting can be defined as:

the prediction of outcomes, trends, or expected future behavior of a business, industry sector, or the economy through the use of statistics. Forecasting is an operational research technique used as a basis for management planning and decision making. Common types of forecasting include trend analysis, regression analysis, Delphi technique, time series analysis, correlation, exponential smoothing, and input-output analysis. (CNET Networks, Inc., 2008)

Strip hotel occupancy percentage: The average rate of hotel occupancy of hotels located on the Las Vegas Strip, as defined by the LVCVA, for one calendar year as reported by the Las Vegas Convention and Visitors Authority (LVCVA, 2008b).

Strip visitor volume: The number of visitors to the Las Vegas Strip as determined by the Las Vegas Convention and Visitors Authority between January 1, 2001 and June 30, 2007, a period of 78 months (LVCVA, 2008b).

Total revenue: As defined in the Las Vegas Convention and Visitors Authority (LVCVA, 2008b), the sum of the revenues generated by the following departments in a casino/hotel: Casino, Rooms, Food, Beverage, and Other such as shows, retail, and so on. For the present study, the revenue generation departments of interest are Casino (i.e.,

gaming or gambling) and Rooms (i.e., hotel rooms). The specific revenue term used here is Gaming Revenue.

Tourism: Travel for pleasure; “tourism is about consuming goods and services which are in some sense unnecessary. They are consumed because they supposedly generate pleasurable experiences which are different from those typically encountered in everyday life” (Hämäläinen, 2004, p. 26). Tourism has a travel component.

Win Per Unit Per Day (WPUPD): A unit of analysis in the gaming marketplace. WPUPD is the actual or anticipated yield of a gaming table or device, calculated by dividing the total gaming revenues generated by that device by the number of gaming units available and the number of days in the time period under consideration (Mellen & Okada, 2006).

### Summary

This chapter presents the overview for the present study. A brief history of Las Vegas was offered along with the problem statement, the purpose of the study and its methodology, the significance of the study, its context, and definitions of key terms. In the next chapter, a review of the literature related to Las Vegas and tourism revenue is presented. In Chapter 3, the methodology for the study is described in greater detail.

## CHAPTER 2

### REVIEW OF THE LITERATURE

#### Introduction

Bobby Baldwin, 57-year-old president and CEO of City Center, a lavish development on the Las Vegas Strip, said recently, “Las Vegas is getting ready for the next 50 years of success. . . . The audience does not want any stale products; they want it fresh and exciting. And it is still very much not about the casinos” (Mansfield, 2008, p. 233). Kenneth Harvey, manager of the Alexander McQueen shop at The Wynn agreed: “It is not the same old buffet crowd. . . . These are world-class consumers” (Mansfield, 2008, p. 234). Where many have viewed Las Vegas as a haven for gambling primarily by men at gaming tables and in sports books, it is important to note that women are world-class consumers and often gamblers, too. More important, “American women are the largest national economy on earth—we are 52 percent of the population, but we buy 85 percent of everything” (Rouda, 2008, p. 17).

Las Vegas is shifting to a world class environment for both men and women. It is becoming the “American Dubai, a shining construction project of a city rising out of the desert” (Mansfield, 2008, p. 228). Maybe, instead, it is the U.S. version of “Shanghai, a furiously futuristic city of glass and steel” (Mansfield, 2008, p. 228). Regardless, it is several things previously unheard of when speaking of Las Vegas: (a) a city, (b) world-

class, (c) fresh, (d) futuristic, and (e) sophisticated. This new Las Vegas, in particular The Strip, is the concern of the present study which wants to know about predictions of gaming revenue.

### Las Vegas: Past and Present

Las Vegas has been the fastest growing city in the fastest growing state for nearly two decades (Douglass & Raento, 2004). Douglass and Raento (2004) commented, Las Vegas is “configured by a tradition of invention rather than the invention of tradition” (p. 8). Until the 1990s, Las Vegas tourism was essentially middle class (Douglass & Raento, 2004). Over the last 30 years or so, however, Las Vegas has transformed from 99¢ shrimp cocktails and \$2.99 buffets to a city with fancy gourmet restaurants and world-class cuisine. The high-end of The Strip even includes \$500-a-pull slot machines (Twitchell, 2002). Themes have shifted from desert and wild west to elegant Europe—i.e., Bellagio and The Venetian—and exotic locales—i.e., Mandalay Bay. It has gone from down and dirty to high-end, world-class, and luxury.

The middle class has eroded from the Las Vegas Strip. The first indicator was the implosion of the old Dunes hotel/casino, located at Flamingo Road and South Las Vegas Boulevard, on October 27, 1993, now the site of Bellagio. Over the next 15 years, the Sands, Frontier, Westward Ho, Stardust, El Rancho, and other smaller properties met the same fate. Very few hotel/casinos remain affordable for middle income travelers.

As described by Douglass and Raento (2004), the new Las Vegas hotel/casinos are designed for self-contained pleasure: They are “all entrance and no exit; each façade inviting the tourist through the looking glass and into a labyrinthine, timeless world of

concentrated stimuli designed as much to be disorienting as pleasurable in a relentless campaign to extend the length of onsite visitation” (p. 12).

The concept of luxury was not an original part of Las Vegas. While jewelry stores were always on the scene for wives, girlfriends, and winners, the idea of high-end department stores and boutiques was fairly rare. Pawn shops and flea markets were more the norm. In fact, until the mid-1990s, only three major shopping malls graced Las Vegas—Boulevard east of The Strip, Meadows west of The Strip, and Fashion Show on The Strip. In recent years, however, Galleria Mall in Henderson and Town Square on the south end of The Strip as well as several outlet malls including the Premium Outlet Mall near downtown have added another dimension to the mix. In addition, major hotels, especially the high-end ones on The Strip, have added exclusive brand shops and small boutiques. These “shopping experiences” include the Forum Shops at Caesar’s Palace, the Grand Canal Shoppes at the Venetian, and Mandalay Place at Mandalay Bay. Las Vegas is now a city that “worships the luxe life” (Twitchell, 2002, p. 219).

Booz Allen Hamilton (2005), a global strategic research consulting firm, studied the past and present of Las Vegas tourism. They observed that each wave of growth was started by innovation in the casino business model. For instance, The Strip began with the opening of the Desert Inn Hotel and Casino in 1950. Circus Circus produced the first themed environment in 1970. During the 1990s, the Mirage became the first large integrated resort, and the MGM Grand, dubbed “The City of Entertainment,” was the first branded mega-casino. At the same time, Caesar’s Palace was known for its upscale theme and top name events and entertainment. In 1998, luxury entered Las Vegas big-time with the opening of Steve Wynn’s Bellagio. By the end of the first five years of the 21<sup>st</sup>

century, The Venetian was on the scene as an upscale resort with an integrated convention facility, and The Wynn defined itself as a super luxury resort. Throughout this period, the number of visitors increased from about 6.8 million in 1970 to 44.2 million anticipated by 2010 (Booz Allen, 2005).

Affluent travelers prefer certain brands of hotels in specific locations. Their most preferred, Ritz-Carlton, is available at Lake Las Vegas, about 15 miles from The Strip, but no Ritz-Carlton is closer than that. Their second choice, Hyatt Regency or Park Hyatt, is not in Las Vegas at all, but a Hyatt Place hotel is on Paradise Road on the fringe of The Strip. A Four Seasons is adjacent to Mandalay Bay on The Strip. The fourth preference, Starwood Hotels and Resorts, is represented on The Strip by the Westin Casuarina and Planet Hollywood. Marriott has 10 properties in Las Vegas. The Wynn Las Vegas, the Bellagio Hotel and Casino, and The Venetian Resort Hotel Casino rank among the top 10 individual or independent hotels preferred by affluent travelers (YPB&R, 2006).

Luxury hotels dot The Strip. The Venetian, Bellagio, Four Seasons, and a secret invitation-only part of the MGM called “The Mansion” are among the most opulent (Holly & Weiss, 2003). Opened a decade ago, Bellagio, the product of Steve Wynn’s imagination, was the first Las Vegas hotel/resort intended to be luxurious in an elegantly romantic way. It has also won AAA’s Five Diamond Award. The smaller—only 424 rooms—Four Seasons Hotel Las Vegas, another AAA Five Diamond Award winner, is simply a boutique style hotel without a casino, although the Mandalay Bay casino is adjacent to the hotel. Casually elegant Mandalay Bay’s attraction is its sandy beach and 1.6 million gallon wave pool. It also boasts one of the best boxing arenas in the world as well as *Mama Mia!*, the longest running Broadway-style production in Las Vegas.

The Venetian, in contrast, is the essence of luxury. Scott Messinger, vice president of brand management, stated that “The experience—from when people first greet you, to our front desk staff, to the people that escort you to your room—is luxury” (Holly & Weiss, 2003, p. 32). The Venetian is also home to 18 award-winning restaurants, five James Beard award-winning chefs, and the Canyon Ranch Spa. In addition, inside The Venetian is the Grand Canal, a recreation of St. Mark’s Square in Venice, Italy, with cafés, gondolas, and small shops. It even has an art museum (Holly & Weiss, 2003).

Is the luxury presented on The Strip real, fleeting, or fake? Twitchell (2002) commented:

This stuff, glitz, has always attracted the young. Mass-marketed glitz is always on the edge of *poshlost*. Vladimir Nabokov coined this term to describe everything trite, banal, and commonplace in contemporary culture, albeit from the point of view of a curmudgeon. Clearly, he enjoyed the verbal play on *posh* and *lost*, elegance gone astray, thanks in part to mass production. . . . *poshlost* defies easy translation but suggests “the falsely important, the falsely beautiful, the falsely clever.” (p. 240)

If The Strip is to continue to be successful, it must prolong the philosophy of the urge to splurge among its guests. The Strip must maintain its attraction for spending.

### Visitors to the Las Vegas Strip

Who comes to Las Vegas? The gender distribution is equal as of 2007, and the average age is 49. For the most part, visitors are married (79%) and either employed (67%) or retired (26%). Most have either attended college (24%) or graduated (44%). Largely White (86%), they come primarily from the West (52%), especially California (31%). Only 12% come from other countries (LVCVA, 2008b).

Three factors have driven the Strip market since 1990: (a) increased visitation, (b) spending on lodging, and (c) more upscale visitation (Booz Allen, 2005). At the same time, the income level of the visitors to Las Vegas has increased from 17% above \$80,000 per year to 31% at a comparable level (i.e., \$92,000 in 2008 dollars).

Las Vegas is now the number one convention destination in the United States (*Tradeshaw Week*, 2008). Convention visitors have shown a steady rate of growth since 1990; theirs is twice the rate of growth of leisure visitors. Further, this steady growth rate is three times the rate of growth for conventioners nationally. Increased convention visitation offers the following benefits:

- Higher per visitor spending: Conventioneers spend 50% more on lodging and 20% more on dining than leisure travelers because they are generally reimbursed by their companies.
- More attractive demographics: Conventioneers are younger (61% under 50 vs. 46%) and more affluent (43% income above \$80,000 vs. 13% for leisure visitors).
- Increased hotel utilization: Focus on conventioneers utilizes occupancy mid-week. For example, The Venetian experiences a 97% mid-week occupancy rate, representing about \$30 million in incremental annual revenue, in contrast with the overall Las Vegas mid-week occupancy rate of 87%.
- More predictable spending: “Convention volume also reduces earnings volatility given advanced bookings, contractual stipulations and demand resiliency during downturns.” (Booz Allen, 2005)



The Strip visitor demographic is shifting as well. In particular, the age range is diminishing slightly. In 1999, 27% of Strip visitors were in the 20-39-year-old age bracket. By 2004, the proportion was 29%. At the same time, the 60+ group decreased from 30% to 29%. Further, Booz Allen (2005) contended that the Baby Boomers, defined as those born between 1946 and 1964, will impact Las Vegas tourism because: (a) this group is wealthier than comparable previous generations, (b) they value leisure as evidenced by their spend-rather-than-save mentality, (c) they prefer romance and adventure over relaxation, and (d) their entertainment interests are more similar to the 20- to 40-year-old group. Moreover, Las Vegas is a good destination for meeting up with their adult children.

Revenue is the primary concern of the present study. Twitchell (2002) defined hotel revenue as the new math: “more rooms = more guests = more bettors = higher profits” (p. 220). Not all hotels are winners. A calculation of Average Daily Room Rate (ADR)  $\times$  Occupancy Rate (OR) indicated that upscale hotels have been outperforming lower-priced alternatives since 1999. This fact has led to an increase in high-end development. Simultaneously, high-end retail square footage has more than tripled, and Las Vegas show ticket sales, excluding headliners—i.e., Bette Midler, have nearly doubled.

### Evaluating Tourist Revenue

With the advent of up-scaling and megaresorts, the term “gambling revenue” has transformed into “gaming revenue” (Douglass & Raento, 2004). In their evaluation of Las Vegas tourist revenue data from the Las Vegas Convention and Visitors Authority,

Booz Allen (2005) observed that while nearly 87% of visitors gamble, gaming decreased as a percentage of revenue from 18% in 1990 to 16% in 2004. This suggests visitors' need also for retail, dining, and entertainment activities. Conventioneers, in particular, come to Las Vegas for reasons other than gaming, although many still gamble. Further, they have expense accounts, enabling them to pay more for food and lodging. In addition, up-scaling has increased room rates significantly; therefore, the visitor's greater expenditure on a hotel room has increased the share that goes towards lodging.

#### *Hotel Room Revenue*

Smith and Lesure (2008) regularly report on hotel room revenue for the U.S. For example, during the third quarter of 2007, hotel room revenue was up 8% over third quarter 2006, but less than expected by 0.4%. The increase in demand was greater than the increase in supply by 0.4%, and the average daily room rate (ADR) increased by 5.6%. The authors attributed the increases to greater business travel. The decline in leisure travel, they contended, was caused by (a) mortgage foreclosures, (b) poor housing market, and (c) high consumer debt.

Hotel industry revenue in the U.S. exceeds \$140 billion per year (Smith & Lesure, 2008). Hotel room rates can be classified in a number of ways: (a) regular, (b) casino rate, (c) casino complimentary (comps), (d) convention, (e) package, (f) tour group, and/or (g) some other special rate (LVCVA, 2008b). Typically, two (2.2) adults stay in a room, and the room cost is about \$109 (LVCVA, 2008b). To be profitable, a minimum 60% hotel room occupancy rate is desirable (Law, 1998).

To predict hotel room occupancy rates, Law (1998) used a neural network with data from Hong Kong hotels over a 23-year period. Input variables deemed to be

influential in hotel room occupancy in Hong Kong were: (a) NoT—number of tourists, (b) ASL—average stay length in number of days, (c) NoH—number of hotels, (d) NoR—number of hotel rooms, (e) TpR—tourists per room, and (f) PHA—percentage of hotel accommodation. Measures of demand are NoT, ASL, and PHA; measures of supply are NoH and NoR; TpR is a measure of demand-to-supply ratio. The output variable is ROR, room occupancy rate. Multiple regression, naïve extrapolation, and neural network analysis resulted in three models of occupancy. The neural network prediction was found to be the closest to the actual data, suggesting neural network forecasting is superior to multiple regression and naïve extrapolation for predicting hotel room occupancy. One recommendation for future research is the inclusion of additional input variables in the neural network model; another is to use cities other than Hong Kong (Law, 1998).

Forecasting hotel room occupancy rates is a critical component of planning because overbooking damages a hotel's reputation, and underbooking leads to financial losses which can not be recaptured. Law (2004) tried another technique for forecasting hotel room occupancy rates: the Improved Extrapolative Room Occupancy Rate Forecasting Model (IERORFM). According to Law (2004), IERORFM uses “past annual room occupancy rates in a data series to compute future values” (p. 72). Its unique feature is the employment of “an incremental approach to calculate the growth rate in the last trend of the data series” (p. 72). IERORFM therefore applies a specified discrepancy produced by prior forecasts to yield a more accurate forecast. Law (2004) experimented with this model using data from 31 years of hotel occupancy rates in Hong Kong. According to Law (2004), IERORFM is promising; however, additional adjustments to

the identified threshold, a subjective measure, need to be made for this model to be truly effective.

In an examination of hotel room supply and demand in Las Vegas, Tsai, Kang, Yeh, and Suh (2006) used econometric variables in a simultaneous framework for the years 1992-1999, a period of 108 months. They found that the three determinants of supply are (a) room rate for the current month, (b) the three-month Treasury bill rate, and (c) gaming revenue per room for the 12-months prior to the evaluation. The only determinant of demand is consumer price index for the current month. This application of microeconomic theory relates to the profitability of hotels, and Tsai et al. (2006) suggested that hotels consider marketing promotions to increase demand.

Gu (2003) examined Las Vegas Strip casino hotel capacity using a single-period inventory model to estimate optimal capacity. Gu's concern related to a downturn in casino hotel profits reported to the Nevada Gaming Control Board by the largest Strip casino hotels from 1999 to 2000 and an anticipation of a saturated market due to overbuilding. Like Tsai et al. (2006) and Law (1998, 2004), Gu (2003) argued for the need for equilibrium in capacity to assure profitability. This need is based on inventory theory that says that hotel rooms, as inventory, are uncertain rather than deterministic, the normal basis for modeling inventory predictions. Booz Allen (2005) suggested that one way to avoid the uncertainty of hotel occupancy is to cater to conventioners, as The Venetian has done with the Sands Expo Center attached to it. The occupancy rate of The Venetian is determined in advance by prearranged hotel rooms for conventions. As a result of their efforts, the Venetian's mid-week occupancy rate is about 97%, about 10% above the Strip norm.

To apply a model to an inventory with an uncertain demand such as hotel rooms, Gu (2003) adopted a model from Anderson, Sweeney, and Williams (2001) who proposed “a single-period inventory model with probabilistic demand for optimizing inventory level” (Gu, 2003, p. 310). This model uses items that can not be stored, like hotel rooms or perishable food products, and items that have an uncertain demand, but exhibit a probability distribution. The single-period incremental aspect is derived from ordering versus not ordering the product. In the analysis conducted by Gu (2003), hotel room capacity was reached on The Strip by 2003, and no additional rooms would be needed. While this model suggested that the Strip hotel room market would be saturated by 2004, the reality is that the market still thrives, and revenue is still produced at high levels.

### *Gaming Revenue*

In Nevada, gaming revenue refers to all sources of income from casino gambling. Slots, video poker, live poker, sports betting, keno, bingo, and table games such as blackjack or 21, craps, baccarat, or a variety of poker games are among the sources of gaming revenue. Gambling is based on probability theory, and the odds are always stacked in favor of the casino. In spite of the odds, sometimes the gambler wins.

The legalized casino industry in the United States began in Nevada in 1931 and went unchallenged until the legalization of gambling in Atlantic City, New Jersey, in 1978. Now every state except Hawaii has some form of casino gambling as a means of increasing tax revenue, employment, and/or tourism (Moss, Ryan, & Wagoner, 2003). In some locales, casino gambling is an addition to other forms of gambling such as horse or dog racing and lotteries. Because of the abundance of casino gambling, gambling

destinations such as Las Vegas have to be able to forecast their winnings. Considering a tourism life cycle may enable better decision making on the part of casino managers and owners as well as on lawmakers regarding expansion of gaming on The Strip.

Moss et al. (2003) tested Butler's S-shaped resort cycle using actual data from the Mississippi casino industry, the third largest casino market in the United States. Butler's model suggests that a resort property goes through seven life stages: (a) Exploration, (b) Involvement, (c) Development, (d) Consolidation, (e) Stagnation, (f) Decline, and (g) Rebirth. To test Butler's model, Moss et al. (2003) used in their analysis the following variables as predictors of casino revenue: (a) average daily win per square foot, (b) gross revenue per day, and (c) total casino square feet in operation. They contended that "because gaming square feet per casino are constrained, the win per square foot per day is a measure of profitability and operational efficiency" (Moss et al., 2003, p. 395). Moreover, the nature of gaming per square foot can change through redesign, repositioning of equipment, or casino promotions.

Moss et al. (2003) found that, generally speaking, the Mississippi casino industry has followed Butler's S-shaped resort cycle through the Stagnation stage. They argued that the industry reached a plateau at that point. To move through the Decline stage and into Rebirth, "more amenities must be offered to attract and keep gamblers and conventions in a flat market" (Moss et al., 2003, p. 398). In Las Vegas, it seems that casinos have been in Rebirth mode for more than a decade.

Not all researchers agree that the Las Vegas Strip will continue to win in the gaming revenue market in the future. In comparison to Macau, a relative newcomer to the casino gaming industry, Las Vegas is quickly becoming a loser. Gu and Gao (2006)

observed that Macau's overall gaming revenue was catching up to that of the Las Vegas Strip: \$5.0 billion compared to \$5.3 billion in 2004. Further, from 2000 to 2004, Macau's revenue increased 26.13%; the Las Vegas Strip, 2.64%. According to Gu and Gao (2006), "Las Vegas, NV and Atlantic City, NJ have experienced slow growth in recent years, a sign that the two largest gaming destinations in North America are approaching market saturation. . . . however, Macau . . . is still full of growth momentum" (p. 2).

Rather than predicting revenue, Gu and Gao (2006) were investigating the profitability and competitiveness of the Macau gaming industry. They compared three asset productivity measures—(a) Daily Slot Revenue per Unit, (b) Daily Table Revenue per Unit, and (c) Assets Turnover Ratio—in six gaming destinations: (a) Macau, (b) Las Vegas Strip, (c) Atlantic City, (d) The Netherlands, (e) Switzerland, and (f) Austria. Gu and Gao (2006) found that in Macau, slot revenue is low, but table revenue is high. To remedy the situation, they recommend increasing the number of slot machines and marketing to slot players. The analysis conducted by Gu and Gao (2006) indicated that one of the strengths of the Las Vegas Strip is in its nearly equal ratio of earnings from slots and tables.

#### Expenditures of the Leisure Traveler

Las Vegas held more conventions or industry shows in 2007 than any other city in the country (*Tradeshaw Week*, 2008). In 2007, nearly 24,000 conventions and tradeshows were held in Las Vegas (LVCVA, 2008c). Only about 20% of visitors come to Las Vegas for business, however; the rest are in town for some pleasurable reason (LVCVA, 2008b). In their average stay of 4.5 days in 2007, visitors to Las Vegas spent about \$109 per night

for lodging, about \$255 for food during the trip, approximately \$97 on local transportation during their stay, nearly \$171 on all forms of entertainment, and about \$556 on gambling (LVCVA, 2008b). A visitor to Las Vegas therefore spends about \$1,500 excluding transportation per visit.

Little research has been conducted on the “determinants of expenditure on tourism products” (Nicolau & Más, 2005, p. 1), although level of income appears to supply the best explanation for vacation-taking behavior and expenditures (Mergoupis & Steuer, 2003). In a study of 3,781 Spaniards over the age of 18, Nicolau and Más (2005) contended that the following variables account for differences in expenditures by tourists: (a) personal restrictions such as income and family size; (b) socio-demographic characteristics like age, education, and size of the city of residence; and (c) psychographic characteristics such as the individual’s opinion about taking vacations. Based on these variables, Nicolau and Más (2005) then categorized tourist expenditure determinations into three groups: (a) individual characteristics related to the trip itself such as the length of the journey to the destination and the type of accommodation; (b) personal restrictions such as income, size of family, and number of children; and (c) socio-demographic characteristics—i.e., age, marital status, education.

Increased tourism has been attributed to three phenomena: (a) income growth, (b) reduced working hours, and (c) saturation of other forms of consumer spending (Hämäläinen, 2004). People with more income are more likely to take vacations (Divisekera, 2007; Nicolau & Más, 2005). Similarly, better educated people, who typically have greater income and more interest in tourism generally, are also more likely to take vacations. As a result, “tourism generally behaves as a *normal good* with positive



demand-income elasticity, increasing its consumption as income increases” (Nicolau & Más, 2005, p. 2). In addition, larger households are less likely to travel regardless of income because of the high costs and logistical problems associated with vacationing with a group of varied ages and interests (Collins & Tisdell, 2002).

The more time a person is on vacation and the greater the distance he or she travels from home, the greater the expenditure (Nicolau & Más, 2005). Moreover, the higher the cost of accommodations, such as hotels as opposed to staying with friends and relatives, the greater the expenditure (Divisekera, 2007; Nicolau & Más, 2005). Further, Nicolau and Más (2005) observed that the determination of vacation expenditures is actually a two-step process. First, the individual decides to take a vacation; second, he or she decides how much to spend on it. Moreover, a tourist must be able to afford both the time and the money required to travel (Hämäläinen, 2004).

Availability of income is the primary determinant of tourism expenditures (Divisekera, 2007; Nicolau & Más, 2005). According to the most recent data available from the U.S. Bureau of the Census (2005), 20% of the U.S. population earn more than \$145,970, and the top 5% earn over \$260,464. While 22% of visitors to Las Vegas in 2007 earned between \$140,000 and \$149,999, only 2% earned more than that amount (LVCVA, 2008b). This suggests that Las Vegas may not yet be attracting high-income tourists for the luxury The Strip now offers.

#### *Summary of Tourist Budget Theory*

Nicolau and Más (2005), in their studies of vacations among residents of Spain, defined level of income as supplying the best explanation for vacation-taking behavior and expenditures while on vacation. They further identified the following groups of

factors which determine tourist budgeting: (a) income and family size; (b) age, education, marital status, and size of the home city; (c) their opinions about taking vacation—i.e., whether traveling is a value to them; and (d) length of stay, travel distance, and accommodations. Similarly, Hämäläinen (2004), in studying Finnish travelers, found that the three most important requirements related to vacation budgeting were: (a) time, (b) money, and (c) desire. Finally, Divisekera (2007), in an analysis of the Australian travel industry, examined the influence of the reason for travel: (a) holiday, (b) business, or (c) visiting relatives. The reason for the travel influenced the budgeted amount for the trip.

### The Concept of Luxury

The term *luxury* connotes exclusivity, desirability, and high cost (Berry, 1994). A luxury is typically an item that is not a necessity of life, but an individual would very much like to have it. Luxury is not to be confused with conspicuous consumption, “the satisfaction of which derives from audience reaction” and is the “consumption of the totally useless,” although not necessarily pointless (Berry, 1994, p. 30).

Adopted also by Twitchell (2002), Berry (1994) observed four categories related to tourism where luxury might be an important consideration: (a) sustenance such as food and drink; (b) shelter—the accommodations; (c) clothing or apparel to include accessories, jewelry, perfume, and the like; and (d) leisure activities such as entertainment, a spa, a pool, and so on. While food, drink, shelter, clothing, and play are necessities of life, the types of these necessities are luxurious if they fill a want or a desire rather than a need (Berry, 1994).

Luxury has several qualitative components, For example, luxury goods are designed “to please” (Berry, 1994, p. 12). They also provide comfort. The features of luxury goods are desirable, but unnecessary such as in luxury automobiles. Luxury may also have social meaning, and what is defined as luxury to one person may not be a luxury at all to another. “The crux of the matter is the ‘relativity’ of luxury; one person’s luxury can be another’s necessity” (Berry, 1994, p. 33). Luxury is related to what a society “values or thinks important” (Berry, 1994, p. 199). In terms of the Las Vegas Strip, the fact that about 40 million visitors come to experience it each year strongly suggests that society values it and thinks it is important.

Luxury also changes over time. Twitchell (2002) noted the following differences as “Luxury Hot” and “Luxury Not” for contemporary and past luxury (p. 149):

<b>Luxury Hot</b> <i>Contemporary Luxury</i>	<b>Luxury Not</b> <i>Past Luxury</i>
Line-dried clothes	Clothes dryers
Revival movie theaters	Satellite dishes
House charge	ATM cards
Ashtrays	Humidors
Dressmakers	Designer sheets
Candlelit chandeliers	Gas fireplaces
Coke in glass bottles	Frozen vegetables
Legible liner notes	Cappuccino at bookstores
Bacon-and-egg breakfasts	Croissants
Farmers’ markets	Roses
Outdoor kitchens	Dishwashers
Hand-knit afghans	Cashmere sweaters
Letters from friends	Federal Express

Twitchell (2002) is quick to point out that modern and luxurious are not interchangeable; however, the term *technoluxe* refers to the luxury attributed to new technology. Washing machines and dishwashers, for example, used to be considered luxuries; now most American believe they are necessities. Further, technology tends to start out quite

expensive; as the supply and demand reach equilibrium, the price declines and stabilizes. The VCR in its beta version in the late 1970s, for instance, was about \$2,000; by the time a VCR was in every home in the mid-1980s, the cost was below \$300. Now that the VCR technology is obsolete, it is quite inexpensive, if even available, and/or it is combined with the more current DVD technology.

The current trend, according to Twitchell (2002), is for opuluxe—“frippery” (p. 63). Opuluxe is the group of items that are “low in utility, but . . . [they have] become more and more necessary to more and more people” (Twitchell, 2002, p. 63). The new Las Vegas represents “themed opuluxe” of “gargantuan” proportions (Twitchell, 2002, p. 64).

### Creating Upscale Tourism in Las Vegas

“Tourism represents a special category of demand” (Hämäläinen, 2004, p. 37), and Las Vegas obviously fills that demand for about 40 million people per year. For instance, as recently as 2005, Las Vegas was bringing in more than \$33 billion a year in tourism alone (Hoffer, 2005). Travel writer Richard Hoffer (2005) quoted Las Vegas Mayor Oscar Goodman: “This [Las Vegas] is a fantasy world, a place where you can celebrate freedom, have a good time, leave your cares behind, go to the cusp of what’s legal” (¶ 6). No wonder Las Vegas is the top adult tourist destination in America.

Las Vegas is more than just a luxury tourist attraction; it is also a place to live, which is the reason about 84,000 people migrate to Las Vegas each year. Less known is the fact that about one-third of that number also leave (Las VegasNevada.gov, 2007). Not only is the weather a major attraction in spite of the summer heat, it is “the unending

demand for manpower. For every hotel room that gets added along the neon-washed Strip, five more workers are sucked into a feverish economy—hotel maids, doctors, carpenters. The opportunities are staggering” (Hoffer, 2005, ¶ 10). Tourism, especially luxury tourism, drives the demand for more workers of all types.

Luxury travelers vary in degree of wealth and psychographic profile. For example, Ikkos (2004) identified three levels of wealth: (a) Tycoons, capable of fulfilling all of their vacation fantasies; (b) Very rich people, who demand impeccable door-to-door, confidential, personalized, and individualized service; and (c) Rich people, who are probably still working and demand value in services. Ikkos (2004) further categorized five segments according to psychographic profile: (a) Elite Luxury Lover—image, status, and exclusivity seekers; (b) Aspiring Luxury Lover—same tastes as Elite Luxury Lover, without the money to back it up; (c) Savvy Luxury Shopper—shrewd customers who seek value for their money, bargains, and discounts; (d) Luxury Explorer—seekers of unique experiences with intense feelings, senses, and sounds in unusual environments; and (e) Satisfied Luxury Admirer—not world travelers, usually older, have money. The key to addressing all categories of wealth and luxury, according to Ikkos (2004), is high quality service with different marketing strategies for each group, for “the luxury tourist does not seek the best price but the best product” (p. 1). Moreover, the luxury market segment can produce higher revenues with fewer tourists.

Las Vegas sells indulgences—individual satisfaction (Twitchell, 2002). The original religious context of indulgence was papal provision of relief. The modern use of indulgence suggests luxury as an entitlement, a relief based on increased self-esteem.

Hotel rooms and public spaces on The Strip are opulent beyond imagination. According to Twitchell (2002):

Somehow these disparate aspects of public and private luxury are coming together in postmodern Vegas: the importance of textured experience, manipulated indulgence, isolation, increasing levels of private affirmation, and, most of all, a dream world where some kind of subtle reaffirmation and redemption occurs just by being there. The one thing Vegas luxury is not is simple. It is layering itself down over other experiences. (p. 257)

Tourism in Las Vegas has broadened to include gambling, conventions, luxury shopping, and entertainment in the form of shows, museums, and themed environments. The Strip has something for everyone.

Visitors do not come to Las Vegas for the primary purpose of gambling, although 84% of them do gamble while they are here. This makes sense because, in the United States, only the state of Hawaii does not yet have gambling of any kind. According to the LVCVA (2008b), only 1% of first-time visitors come to Las Vegas to gamble; however, overall 11% of visitors come for that reason. Nearly half (48%) would come back to Las Vegas to gamble in spite of an array of alternate gambling options.

An increasing number—13% in 2007—travel to Las Vegas to visit friends and relatives. In addition, people come to Las Vegas an average of 1.8 times a year and 6.3 times over five years. The number of visits per year has remained stable over the last five years (LVCVA, 2008b). Another stable figure is the proportion arriving by car (54%) and airplane (46%) as well as the proportion from other countries (12%).

Certain other numbers have also remained the same. For example, 99% of visitors stay overnight for an average of 3.5 nights, and the average length of stay is about 4.5 days. Nearly all (95%) stay in a hotel, paying about \$109 per night if their room is not a

part of a package deal. Most (74%) stayed in a hotel on or near The Strip (LVCVA, 2008b).

The evaluation of Las Vegas revenue conducted by Booz Allen (2005) suggested that tourism will continue to go upscale in Las Vegas, especially on The Strip as it increases its high-end and luxury accommodations and activities. They found that “the result of up-scaling and conventions [is that] gaming is a core but less critical element of the emerging hotel/casino business model” (p. 9). In addition, the LVCVA target number of visitors for 2009 is 43 million, representing a 2.8% per year growth rate since 2004. With the 2004 average hotel occupancy rate at 89% and the concomitant increase in hotel building, lower visitation growth would result in an 86% occupancy rate. In addition, lower visitation would increase competition. Booz Allen (2005) contended that “distinct and newer hotel offerings will fare better amidst more intense competition” (p. 10). The convention market is one resource to increase visitation.

*The Las Vegas Strip: A Convention and Leisure Destination*

The five largest convention markets in the U.S. are in rank order: (a) Las Vegas, (b) New York, (c) Chicago, (d) Orlando, and (e) Atlanta (*Tradeshaw Week*, 2008). Since 2004, Las Vegas has been the fastest growing convention market (Booz Allen, 2005). In fact, Las Vegas hosted the greatest number of the 200 largest conventions in 2007 and holds the greatest market share for meetings of more than 100,000 and less than 10,000 people. Further, with 45% of the largest conventions held in Las Vegas, the Las Vegas Convention Center also has the largest space with 3.2 million square feet, 27% of all the convention space on The Strip.

The Strip has lots to offer both the convention and the leisure visitor. GLS Research (LVCVA, 2008b), on behalf of the Las Vegas Convention and Visitors Authority (LVCVA), found that in 2007, visitors were attracted to Las Vegas, as indicated on a 5-point Likert-type scale where 5 is the highest, by (a) gambling (3.4), (b) shows and entertainment (3.4), (c) dining and restaurants (3.3), (d) seeing resort properties (3.2), and (e) shopping (2.8).

Hämäläinen (2004) said, “The existence of country-specific commodities that have to be bought . . . locally plays an essential role in tourism” (p. 25), enabling some shifting of the tax burden from residents to tourists. In spite of the GLS Research (LVCVA, 2008b) report that indicated that shopping ranked below average as a Las Vegas Strip attraction, retail on The Strip is booming. In 2006, tourists spent \$4.6 billion in Strip retail shops; moreover, it is predicted that the amount spent in 2010 will be \$6.1 billion, a 32.6% increase. The demand will exceed the supply, forcing prices up. The demand is based on two new facts about the Las Vegas Strip: (a) increased accessibility to luxury goods such as those found in New York and Beverly Hills and (b) hosting of two of the world’s largest fashion shows. In addition, the increase in income level of visitors to The Strip has been consistent with retail spending in spite of the general retail decline following 9/11. Further, the extended shopping day available on The Strip along with “captive resort audiences and constantly refreshing wallets” (Booz Allen, 2005, p. 16) has led to increased retail spending.

Entertainment is another key to tourism on The Strip. Beginning with the Cirque du Soleil show *Mystère* in 1993, entertainment innovation has accelerated on The Strip, and several Cirque du Soleil shows continue to do well. The only long-running Broadway



show in Las Vegas, *Mamma Mia!*, continues at Mandalay Bay as well; other Broadway performances have not lasted long.

Security is another factor in keeping tourists coming to Las Vegas, especially since 9/11 (Goodrich, 2001). Goodrich (2001) reported:

The tourism industry in America was severely affected, with *immediate* declines in airline passenger loads of up to 50%, and similar declines in hotel occupancy, and in patronage at restaurants and department stores across the USA. The U.S. economy was nudged into a recession, the U.S. Stock Market faltered/declined, over 100,000 people were laid off in the U.S. airlines industry, and thousands more lost their jobs in other sectors of the inter-dependent tourism industry (e.g., hotels, restaurants, gambling casinos). (p. 2)

Increased security became immediately evident in airports and other travel departure spots, and airline travel, one primary mode of transport for visitors to Las Vegas, was suddenly more complicated and more expensive. Hotel room occupancy rates declined 30%-50%, forcing hotels to implement incentives such as free breakfast, discounted tickets to attractions and shows, and three nights for the price of two (Goodrich, 2002). Due to fear of flying, Las Vegas casinos reported declines of as much as 50% in patronage (Goodrich, 2002).

Another problem that could negatively affect Las Vegas tourism is gas prices. It is believed that if gas prices go up—and at this writing they have just topped \$4.25 per gallon—demand for hotel rooms goes down (Walsh, Enz, & Canina, 2004). Moreover, it is important to remember that the majority of Las Vegas visitors arrive by car, while the rest travel by air. Increased gas prices significantly impact both modes of transportation. As anticipated, Walsh et al. (2004) found an inverse relationship between gasoline prices and lodging demand. In addition, the demand was most negatively affected at the low- and middle-end of the lodging prices. The high-end was least harmed, suggesting that the

role of upscale Strip hotels in addressing a world-class and luxury clientele will not be significantly affected by the current trend in gasoline prices.

### Predicting Tourism on the Las Vegas Strip:

#### The Role of Revenue Forecasting

The art and science of revenue forecasting are critical components in the budgeting process especially in the hotel industry (Buckhiester, 2003). From a business perspective, revenue forecasting can be defined as:

the prediction of outcomes, trends, or expected future behavior of a business, industry sector, or the economy through the use of statistics. Forecasting is an operational research technique used as a basis for management planning and decision making. Common types of forecasting include trend analysis, regression analysis, Delphi technique, time series analysis, correlation, exponential smoothing, and input-output analysis. (CNET Networks, Inc., 2008)

While the primary consideration in the present study is gaming revenue, in Las Vegas, hotel revenue impacts gaming revenue because in most cases, the casino and the hotel are linked.

The three most common forecasts in the hotel industry are: (a) Occupancy, (b) Demand, and (c) Revenue. The purposes and orientations of these three common forecasts are depicted in Figure 5. For the present study, revenue forecasting is the focus. Its purpose is to “inform senior management and ownership of occupancy, rate and revenue estimates for the next three months and beyond” (Buckhiester, 2003, p. 10). Unlike occupancy and demand forecasting, revenue forecasting has a financial orientation that facilitates cash flow projections, purchasing requirements, and mix analysis. It is established by individual market segments, is produced monthly, and estimates roomnights (i.e., occupancy rates), average rate (i.e., average daily rate—

ADR), and revenues (i.e., hotel room revenues). Through an analysis of trends over time, it shows constrained demand such as the demand during holiday periods and for special events like conventions and concerts.

### *Forecasting Hotel Room Revenue*

Forecasting hotel room revenue can help avoid uncertainty in an uncertain industry (Aghazadeh, 2007). The purpose of revenue management (RM) in the hotel industry is to maximize revenue through forecasting of future demand. The forecast is based on historical room reservation data (Avinal, 2004). RM relies on the strategic issues of duration control and demand-based pricing. To this end, according to Avinal

<b>Making forecasts</b>		
<b>Occupancy forecast</b> <b>Purpose:</b> To tell operating departments how busy the hotel is expected to be. <b>Operational orientation</b> <ul style="list-style-type: none"> <li>■ Facilitates scheduling</li> <li>■ Shows arrival/departure patterns</li> <li>■ Provides business mix details</li> <li>■ Allows department to gauge food and beverage/other income volumes</li> <li>■ Doesn't exceed 100 percent</li> <li>■ 4/7/14/21 days out</li> <li>■ Produced weekly</li> <li>■ Involves roomnights only</li> <li>■ Represents constrained demand</li> </ul>	<b>Demand forecast</b> <b>Purpose:</b> To establish selling guidelines and demand criteria for the revenue forecast. <b>Strategic orientation</b> <ul style="list-style-type: none"> <li>■ Identifies excess demand</li> <li>■ Identifies "need" periods</li> <li>■ Facilitates development of selling guidelines</li> <li>■ Established by segment</li> <li>■ Might exceed 100 percent</li> <li>■ 30/60/90 days out—plus up to 12 months out</li> <li>■ Produced daily on a rolling basis</li> <li>■ Roomnights only</li> <li>■ Represents unconstrained demand</li> </ul>	<b>Revenue forecast</b> <b>Purpose:</b> To inform senior management and ownership of occupancy, rate and revenue estimates for the next three months and beyond. <b>Financial orientation</b> <ul style="list-style-type: none"> <li>■ Facilitates cash flow projections</li> <li>■ Facilitates purchasing requirements</li> <li>■ Facilitates mix analysis</li> <li>■ Established by individual market segments</li> <li>■ 30/60/90 days out and beyond as required</li> <li>■ Produced monthly</li> <li>■ Estimates roomnights, average rate and revenues</li> <li>■ Represents constrained demand</li> </ul>

Buckhiester Management USA

*Figure 5. Types of business forecasting (Buckhiester, 2003).*

(2004), "hotels have to make pricing more variable and customers' use of a hotel's services more predictable" (p. 52). On the Las Vegas Strip, Friday and Saturday nights are virtually always high demand, increasing the price, and Sunday through Thursday are

lower demand, often forcing hotels to offer “deals” to fill their rooms if no compensating special attraction is keeping room rates high (Aghazadeh, 2007).

To forecast hotel room revenue, Aghazadeh (2007) applied three different time-series forecasting models: (a) Weighted Moving Average (WMA), (b) Exponentially Weighted Moving Average (EMA), and (c) Holt-Winters (HW). WMA places greater “weight on recent data, while EMA applies a fixed percentage of the week’s room revenue to last week’s moving average” (p. 34). This process enables exponential growth of the WMA. HW is a variant of EMA that is best used when data have both trend and seasonality, such as in the hotel industry. Aghazadeh (2007) found that HW provides the best predictive value for hotel room revenue because it allows for trends and seasonality; therefore, trends and seasonality are important considerations in developing a revenue model in the hotel industry.

#### *Forecasting Gaming Revenue*

The model in the present research has never been studied. For example, 40 years ago, Cargill and Eadington (1978) developed a predictive model for forecasting gaming revenue for the state of Nevada. Its objective was to assist the state in planning for budgetary fluctuations since a large percentage of gaming revenue leads to tax revenue for Nevada. Cargill and Eadington (1978) used multiple regression to analyze factors influencing gross gaming revenues (GGR), defined as the total of winnings minus losses paid out by casinos, over a 20-year period, 1955-1974. The periods identified in the time series were quarters rather than months, the time series used in the present study. In addition, rather than limiting their model to the Las Vegas Strip, as in the present study, they analyzed data from Las Vegas, Reno-Sparks, and Lake Tahoe, the three primary

Nevada gaming areas at that time. The model they applied was the Box and Jenkins (1970) time series model. Cargill and Eadington (1978) discovered that while seasonal fluctuations were evident, they diminished over time. They also found that the economic variable of personal income influenced gaming revenue, but the 1973-1974 gas crisis and national recession did not. Finally, Cargill and Eadington (1978) recommended the use of a time series model, such as that of Box and Jenkins (1970) for predicting gaming revenue.

In a more recent effort to predict gaming revenue in Clark County, Nevada in 1992, Edwards, Bando, Bassett, Rosen, Carlson, and Meenan (1992) created the Western Area Gaming and Economic Response Simulator (WAGERS) model. Estimates in the WAGERS model are based on the following explanatory variables: (a) real U.S. personal disposable income; (b) a deflator for personal consumption expenditures; (c) an index of meals and lodgings costs in the City of Las Vegas; (d) slot, non-slot, and total gaming revenues in Atlantic City; (e) the number of strikes in Las Vegas; (f) tourist volume in Clark County; and (g) the unemployment rate of Clark County (Edwards et al., 1992). To show shift in demand, Edwards et al. (1992) selected disposable income as the variable for measuring purchasing power. Unlike the models produced by the present study, WAGERS is complete only when the External and Gaming revenue submodels are included; they do not stand alone. Moreover, one key limitation offered by Edwards et al. (1992) is the inability of the model to show seasonal fluctuations.

Part of revenue forecasting is examining factors that influence gaming revenue. For example, Macau Special Administrative Region (SAR) is a part of China with its own international airport. Gaming was opened to international developers in 2001, and by

2006, gaming revenue in Macau surpassed that of the Las Vegas Strip and comprised 75% of the SAR's revenue (Central Intelligence Agency, 2008). Raab, Schwer, and Johnson (2007) examined the effects of political and economic crises and casino development in Macau on baccarat revenues in Las Vegas. Baccarat revenues are most influenced by Asian players who favor baccarat over other table games. Asian currency fluctuations, the number and proportion of Asian visitors to Las Vegas, and political events therefore influence revenues from baccarat in Las Vegas. As a case in point, the events of September 11, 2001 and the subsequent War in Iraq kept more Asians gambling close to home. This depressed baccarat revenues in Las Vegas. Following the opening of the Wynn Las Vegas in 2005, however, the baccarat revenues on the Las Vegas Strip rebounded, suggesting alternative and/or additional explanations for the earlier declines.

To determine the influences on baccarat revenue on the Las Vegas Strip, Raab et al. (2007) hypothesized the following possible short- and long-term influences: (a) price of the American dollar in Japan, Korea, Taiwan, and Hong Kong; (b) events of 9/11 and the War in Iraq; and (c) baccarat revenue in Macau. Raab et al. (2007) developed a model that addresses volatility because the variables involved in the prediction model are all volatile. Raab et al. (2007) applied the autoregressive conditional heteroskedasticity (ARCH) model to their analysis. According to Engle (1982), the ARCH model:

considers the variance of the current error term to be a function of the variances of the previous time period's error terms. ARCH relates the error variance to the square of a previous period's error. It is employed commonly in modeling financial time series that exhibit time-varying volatility clustering, i.e. periods of swings followed by periods of relative calm. (p. 988)

The generalized autoregressive conditional heteroskedasticity (GARCH) model is used in conjunction with ARCH when time series data are used; in this case from November

1983 to March 2007. Raab et al. (2007) found: (a) baccarat wins decrease with declining exchange rates; (b) political crises have a negative impact on leisure travel and baccarat revenue; (c) Las Vegas baccarat revenues have increased since the boom of Las Vegas-style casinos in Macau; and (d) hypothesized short- and long-term volatility in baccarat revenue was correct.

In another effort to predict gaming revenue in Macau, Mellen and Okada (2006) compared aspects of Macau with Las Vegas. For instance, they argued that gaming revenue in Las Vegas is correlated highly with the number of visitors. They anticipate increased gaming revenue in Macau as non-gaming attractions develop, making Macau less of a day-trip destination and more of a place for an overnight stay. The Las Vegas Strip is experiencing the same phenomenon, however, as luxury developments are growing at an incredible rate. Because of the day-trip versus overnight nature of Macau, Mellen and Okada (2006) argued for including Visitor Days as a variable in their gaming revenue forecasting model.

### Summary

This chapter provided a review of the literature related to the present study. The fundamental concern of this study is gaming revenue on the Las Vegas Strip as “luxury,” “high-end,” and “world-class” are the buzzwords that currently drive hotel, casino, resort, residential, and office development in Las Vegas. The bottom line is that the number of affluent travelers is increasing, and they want what The Strip is offering. Moreover, that number is not decreasing at all; therefore, high-end tourism is can be maintained in Las Vegas.

The review of the literature did not produce any revenue forecasting models that included all three of the variables in the present study—(a) Strip Visitor Volume (SVV), (b) Strip Hotel Occupancy Percentage (SHO), and (c) Average Daily Rate (ADR)—in forecasting Strip Gaming Revenue (SGR). The models reported are summarized in terms of hotel revenue and gaming revenue.

In terms of hotel revenue, Law (1998) predicted hotel occupancy percentage as a function of the following variables: (a) number of tourists, (b) average length of stay, (c) number of hotels, (d) number of rooms, and (e) the ratio of tourists to rooms. Law (2004) then added trends as a variable to better explain seasonal fluctuations. Tsai et al. (2006) said that hotel room supply is influenced by: (a) ADR for the current month, (b) the three-month Treasury bill rate, and (c) gaming revenue per room for 12 months. In analyzing the Las Vegas Strip, Gu (2003) anticipated that the number of rooms would have saturated the market by 2004. Finally, both Aghazadeh (2007) and Avinal (2004) applied historical room reservation data to the prediction of hotel revenue, and Aghazadeh (2007) used trends in his analysis.

In terms of gaming revenue, Moss et al. (2003) applied Butler's S-shaped resort cycle in an analysis of the casino industry in Mississippi. Variables included: (a) average daily win per square foot, (b) gross revenue per day, and (c) casino square feet in operation. Gu and Gao (2006), in discussing the future of the gaming industry in Macau, looked at: (a) daily slot revenue per unit, (b) daily table revenue per unit, and (c) assets turnover ratio. They also analyzed gaming revenues by: (a) number of slots, (b) number of tables, (c) the ratio of slots to tables, and (d) the ratio of revenues from slots to revenues from tables. Cargill and Eadington (1978) used multiple regression analysis



with the Box and Jenkins (1970) time series model to predict gaming revenue in Nevada and found that personal income is the greatest influence on gaming revenue. They also looked at trends to account for seasonal fluctuations.

Edwards et al. (1992) applied their WAGERS model to predict gaming revenue for Clark County, Nevada. They found three important influences on gaming revenue: (a) personal income, (b) meals and lodging costs in Las Vegas, and (c) tourist volume. Raab et al. (2007) investigated the influence of baccarat revenue in Macau on baccarat revenue in Las Vegas. They found three variables that impact baccarat revenue in Las Vegas: (a) fluctuations in Asian currency in relation to the U.S. dollar, (b) the number and proportion of Asian visitors to Las Vegas, and (c) political events such as the War in Iraq. Finally, Mellen and Okada (2006) explored the future of gaming revenue in Macau. They found that the number of visitor days is an important variable because Macau has been a day-trip destination and now seeks to become an overnight destination.

In the next chapter, the methodology for the present study is described. The goal of this study is to develop a model relating historical inputs and revenue to enable better planning for Las Vegas Strip development. Based on the review of the literature, this researcher hypothesized that Strip visitor volume (SVV), Strip hotel occupancy percentage (SHO), and average daily hotel room rate (ADR), taken together, influence Strip gaming revenue (SGR). The model developed for the present study demonstrates such influences.

## CHAPTER 3

### METHODOLOGY

#### Introduction

In this chapter, the research model and hypotheses are presented along with the research procedures including data collection and analysis. The proposed model is also discussed. For the purpose of this study, three input measures—Strip Visitor Volume (SVV), Strip Hotel Occupancy Percentage (SHO), and Average Daily Rate (ADR)—are examined as possible predictors of Strip Gaming Revenue (SGR).

#### Research Model and Hypotheses

Las Vegas Strip revenue comes from two primary sources: gaming and hotel rooms. The revenue of interest to the present study is Strip gaming revenue. As shown in the review of the literature, revenue is influenced by several variables. The Las Vegas Convention and Visitors Authority (LVCVA, 2008) identified the following three variables—(a) Strip Visitor Volume, (b) Strip Hotel Occupancy Percentage, and (c) Average Daily Rate (ADR)—which have not been shown previously to influence or predict Strip Gaming Revenue. The purpose of this study is to test hypotheses relating to the feasibility and maintenance of luxury tourism in Las Vegas as evidenced by revenue

forecasting based on the influence of these three variables on gaming revenue. These hypotheses are:

H<sub>1</sub>: There is a significant positive relationship between Strip Visitor Volume and Strip Gaming Revenue.

H<sub>2</sub>: There is a significant positive relationship between Strip Hotel Occupancy Percentage and Strip Gaming Revenue.

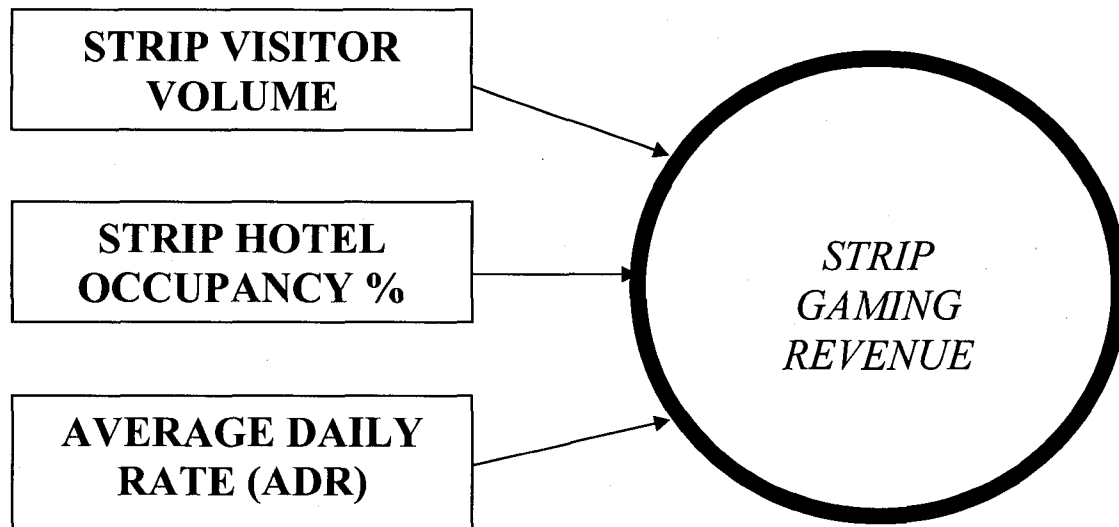
H<sub>3</sub>: There is a significant positive relationship between Average Daily Rate and Strip Gaming Revenue.

Based on the hypotheses, a model was developed to indicate the relationship of three variables—(a) Strip Visitor Volume, (b) Strip Hotel Occupancy Percentage, and (c) Average Daily Rate—with Strip Gaming Revenue. Hypotheses H<sub>1</sub> through H<sub>3</sub> are the regression coefficients of each of the three independent variables for Strip Gaming Revenue.

A model is under consideration for the present study. It looks at the set of input variables—(a) Strip Visitor Volume, (b) Strip Hotel Occupancy Percentage, and (c) Average Daily Rate—in terms of their influence on Strip Gaming Revenue. The model is displayed as Figure 6.

#### Data Collection

To test the hypotheses which evolved from the literature review, the researcher acquired the latest available internal proprietary data collected by the Las Vegas Convention and Visitors Authority (LVCVA) between January 2001 and June 2007 (LVCVA, 2008b). The data included information about Strip visitors, hotel occupancy,



*Figure 6.* Influence of three variables on Strip Gaming Revenue.

and the average daily rate of the hotels. These data were identified from the literature review as pertinent influences on Strip Gaming Revenue. The data were then analyzed in relation to the hypotheses.

Data gathered by LVCVA are considered secondary data. Very simply, secondary data are pieces of information collected for reasons other than the present study (Zikmund, 2003). Secondary data may also be reports of research carried out by others, theories developed by others, or experiences of others (Gall, Gall, & Borg, 1999). The use of secondary data is advantageous because such data are usually historical in nature, already compiled, and objective; therefore, access to additional participants is not required, minimizing potential bias. It is also cost effective and time efficient since no additional expenditures of money or time are necessary to obtain the data (Gall et al., 1999; Zikmund, 2003). For the present study, secondary data were readily available for providing a starting point for this exploratory research and the development of revenue

models. Further, the LVCVA (2008b) data are the most current data available on Las Vegas Strip visitors, hotel occupancy, hotel rates, and gaming revenue.

The disadvantage to using secondary data in research is that the researcher can not “control how the research was designed, collected, manipulated, interpreted, and documented” (Nykiel, 2007, p. 29); therefore, acquiring data from a reliable source is critical to successful research results. The data used for the present study were gathered by GLS Research, an independent research organization, for the LVCVA (2008b) who then published the data. To obtain information about the number of visitors to Las Vegas and other useful data, GLS Research used interviews of random Las Vegas visitors at casinos, hotels, motels, RV parks, and other places where visitors were likely to be. Those interviewed were preparing to leave for home within 24 hours of being interviewed. To provide accurate hotel occupancy data and average daily hotel room rate, the LVCVA conducts a monthly hotel room audit. Transportation information comes from McCarran International Airport and the Nevada Department of Transportation as well as from individual respondents. Data about transportation help support the accuracy of the number of visitors to The Strip.

Reliability is the level to which measures are free from errors and thereby consistently produce similar results (Zikmund, 2003). The secondary data concerning the Las Vegas Strip used in the present study were gathered by an extremely reliable source, GLS Research for the Las Vegas Convention and Visitors Authority (LVCVA, 2008b). GLS Research (LVCVA, 2008b) reported using careful interview protocols to ensure the acquisition of reliable data. Further, given the credibility of the LVCVA, the data are deemed reliable and accurate for use in the present study.

Revenue data come from the Nevada Gaming Control Board (NGCB) through the LVCVA. These data are reported by the LVCVA (2008b).

Reliability is necessary for validity (Zikmund, 2003). Validity refers to the degree to which an instrument measures what it is intended to measure. While several forms of validity are evident, external validity is most relevant to the present study. External validity refers to the ability to generalize findings to another population or setting. Because the present study is limited to the Las Vegas Strip, the models developed may not necessarily be applicable to other tourist venues; therefore, external validity may not be present.

### Data Analysis

The data were analyzed by the Statistical Package for the Social Sciences 14.0 (SPSS, 2008). Descriptive statistics were used to check for missing data, outliers, and errors.

In anticipation of performing regression analysis on the data, proper statistical procedures were followed (Dunn, 2006). First, data were screened to eliminate possible errors. Data were then transformed to improve the quality of the model. Finally, model diagnostics were used to ensure statistically valid results and assure understanding of the predictive power and overall usefulness of the regression model.

Before testing the hypotheses, normality, constant variance, and linearity were assessed by residual and linear plots. In addition, multicollinearity was examined. With significance set at  $p < .05$ , multiple linear regression analysis was conducted to test the hypotheses.

Regression analysis is a technique used for the modeling and analysis of numerical data consisting of the values of a dependent variable and one or more independent variables. This methodology has been used in a variety of industries such as retail, service, and hospitality (Dunn, 2006; Nykiel, 2007). The first step in regression analysis is to define the dependent variable. For the model, Strip Gaming Revenue (SGR) is the dependent variable. It is defined as the total amount of money wagered by all visitors in the Strip casinos minus winnings returned to the players. It is equivalent to sales, not profit. The three independent variables are: (a) Strip Visitor Volume (SVV)—the number of visitors who stayed on the Las Vegas Strip, (b) Strip Hotel Occupancy Percentage (SHO)—the percentage of all hotel rental rooms or units that are occupied at a given time on the Las Vegas Strip, and (c) Average Daily Rate (ADR)—the average cost of the hotel rental room or unit. In the present study, a unit of time is equivalent to one month.

A multiple regression analysis reveals the collective contributions of individual independent variables to the prediction or explanation of the variance in the dependent variable. The end result is a predicted value for the dependent variable under the given state of the independent variable(s).

#### Assumptions of Multiple Regression

Before conducting the analysis, the assumptions of multiple regression were evaluated. According to Dielman (1996), the four major assumptions for linear regression are: (a) the relationship is linear, (b) the disturbances have constant variances, (c) the disturbances are independent, and (d) the disturbances are normally distributed.

The linearity assumption was examined by plotting the residuals for both the dependent and the independent variables. If the plots appear to show no visible pattern, then the linearity assumption is not violated. Next, plots with residuals versus the independent variables were used to check the assumption of constant variances. When the plots show the residual scattered randomly around zero and no differences are evident in the amount of variation in the residuals regardless of the value of the variables, then the constant variances assumption is assured. Third, the disturbances are independent when no autocorrelation problem is found and each observation is independent. This assumption can be verified by Durbin-Watson tests. A value of 2 on the Durbin-Watson test is the cut-off point for supporting the assumption that the disturbances are independent and that no autocorrelation problem is present (Dielman, 1996). Finally, to test to see if the disturbances are normally distributed, a P-P plot of the residuals and cumulative probability distribution is run through SPSS.

In multiple regression, the independent variables should not be highly interrelated; therefore, multicollinearity is examined by Tolerance and variance inflation factor (VIF). Collinearity statistics with a Tolerance larger than .1 and a VIF smaller than 5 are the criteria for determining multicollinearity problems (Dielman, 1996; Tabachnick & Fidell, 1996).

In general, a VIF larger than 5 is considered problematic (Snee, 1977). According to Tabachnick and Fidell (1996), "The greater the multicollinearity, the more unstable is the partial regression coefficient. Therefore, the likelihood that they are statistically significant is lower" (p. 45). As a result of understanding the assumptions of multiple regression and potential problems with multicollinearity, the significance level was set at



$p < .05$ , and multiple regression analysis was conducted to test the hypotheses in order to develop the model.

### *Sample Size*

For multiple regression analysis, several rules can generally be applied. For example, researchers suggest that 20 cases per independent variable will be sufficient. Instead, a rule of thumb can be applied where sample size is calculated by applying a cases-to-independent variable (IV) ratio of  $N \geq 50 + 3m$ , where  $m$  = the number of IVs. Therefore, the sample size for the multiple regression equation with three IVs, as in the present study, should be  $50 + (8 * 3) = 74$  cases (Tabachnick & Fidell, 1996). In the present study, each case is a unit of time equal to one month.

### Summary

In this chapter, the methodology to be used for the present study was explained. Multiple regression analysis will be used to test the hypotheses and develop the model. The proposed model was presented along with descriptions of the dependent and independent variables. The method for data collection was described, and the data analysis technique was discussed.

## CHAPTER 4

### DATA ANALYSIS AND RESULTS

#### Introduction

The purpose of this study was to test hypotheses relating to the feasibility of luxury tourism in Las Vegas. Data were analyzed using Strip Visitor Volume (SVV), Strip Hotel Occupancy Percentage (SHO), and Average Daily Hotel Room Rate (ADR) as possible predictors of Strip Gaming Revenue (SGR). In this chapter, the results from the data analysis are explored. First, the data screening procedures are presented, followed by a summary of the descriptive statistics as well as the outcomes and diagnostics of multiple regression analysis, the statistical method used for analyzing the data. The findings are also discussed in relation to the support or rejection of the hypotheses.

#### Data Screening

Prior to data analysis, the data were screened for data entry accuracy, missing values, and outliers. For the purpose of the data screening, the Statistical Package for the Social Sciences 14.0 (SPSS, 2008) was used.

## Descriptive Statistics

Strip Gaming Revenue (SGR) was reported for each month of the 78-month period of the study from January 2001 through June 2007. The minimum and maximum values were noted, and the means and standard deviations were calculated as shown in Table 1.

Table 1

*Descriptive Statistics: Strip Gaming Revenue (n = 78)*

	Minimum	Maximum	<i>M</i>	<i>SD</i>
Strip Gaming Revenue	\$352,590,112	\$638,940,544	\$454,479,371	\$75,875,002

For ease of discussion, the variables will be presented using their acronyms. The dependent variable is Strip Gaming Revenue (SGR), measured in dollars. The independent variables are Strip Visitor Volume (SVV), measured in persons; Strip Hotel Occupancy Percentage (SHO), indicated as a percentage; and Average Daily Strip Hotel Room Rate (ADR), expressed in dollars. The means and standard deviations for the dependent and independent variables are shown in Table 2. The time period or unit of time is 78 months.

## Hypothesis Testing

Multiple regression analysis was employed to test the hypotheses of the study. The assumptions necessary for conducting multiple linear regression analysis were

Table 2

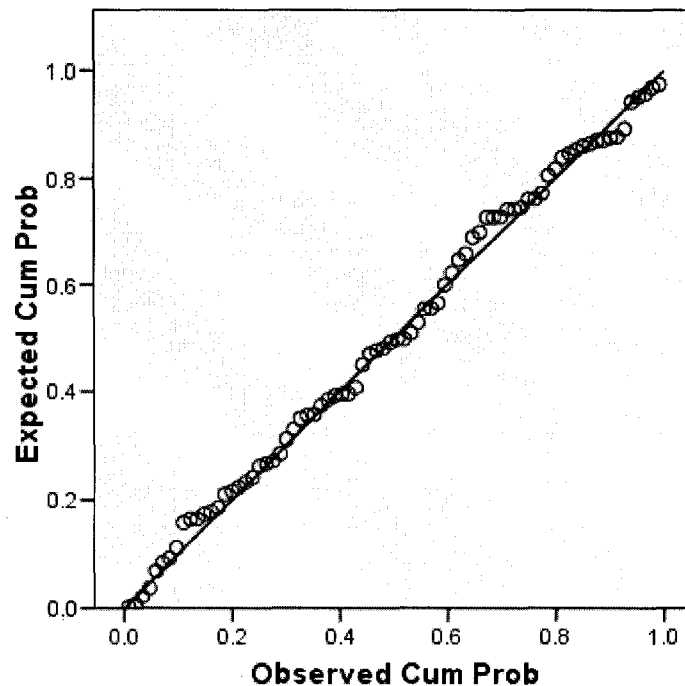
*Descriptive Statistics: Dependent and Independent Variables (n = 78)*

Variable	Acronym	<i>M</i>	<i>SD</i>
Strip Gaming Revenue	SGR	\$454,479,371	\$75,875,002
Strip Visitor Volume	SVV	2,119,379	150,109
Strip Hotel Occupancy Percentage	SHO	92.0%	5.0%
Strip Average Hotel Room Rate	ADR	\$124.55	\$22.06

assessed prior to performing the hypothesis testing. The four basic assumptions of the multiple regression analysis were examined to check for violation of the assumptions that might impact the study: (a) the relationship is linear, (b) the disturbances have constant variances, (c) the disturbances are independent, and (d) the disturbances are normally distributed (Dielman, 1996). Tests for outliers and multicollinearity were also conducted prior to hypothesis testing.

The normality of the data was confirmed through histogram and normal probability plots. The constant variance was verified by examining plots with standardized residuals of the Y variable and standardized predicted values of the X variables. The linearity was evaluated by examining the scatter plot of independent variables (SVV, SHO, and ADR) versus the dependent variable (SGR). The results met the requirement; therefore, no assumptions were violated. To test for the normally distributed residual error, a normal P-P plot of regression was conducted (Figure 7). Errors, represented by the residuals, should be normally distributed for each set of values

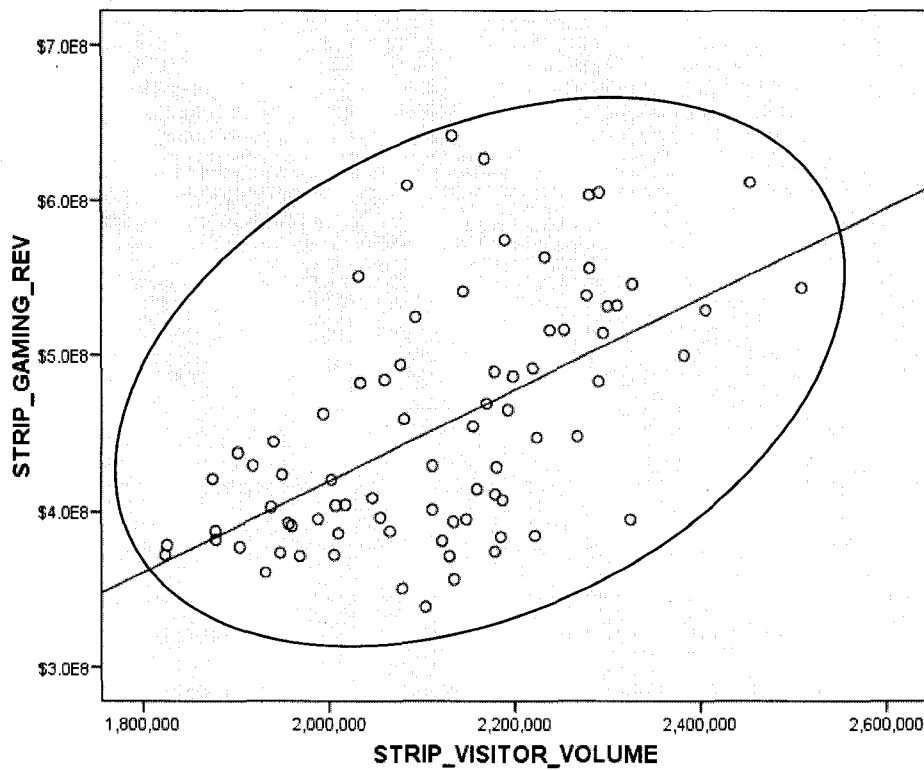
of the independent variables: SVV, SHO, and ADR. As shown in Figure 7, the cumulative probabilities of occurrence of the standardized residuals are located on the Y axis; of expected normal probabilities of occurrence, on the X axis. As in this case, if the plot conforms to a 45° line, then the observed occurrences conform to what is normally expected.



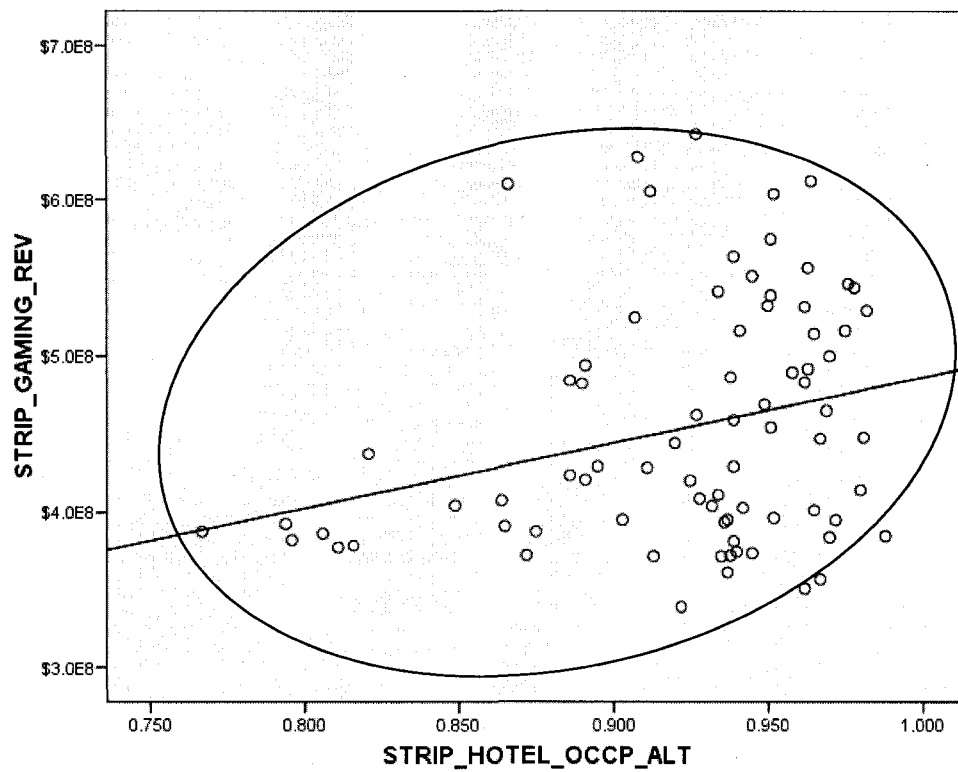
*Figure 7.* Normal P-P plot of regression standardized residual with Strip Gaming Revenue as the dependent variable.

Regression analysis assumes linearity. Linearity means that a straight line relationship exists between the independent variables and the dependent variable. In regression analysis, nonlinear relationships between the independent variables and the dependent variable are not considered important; therefore, testing for linearity is critical

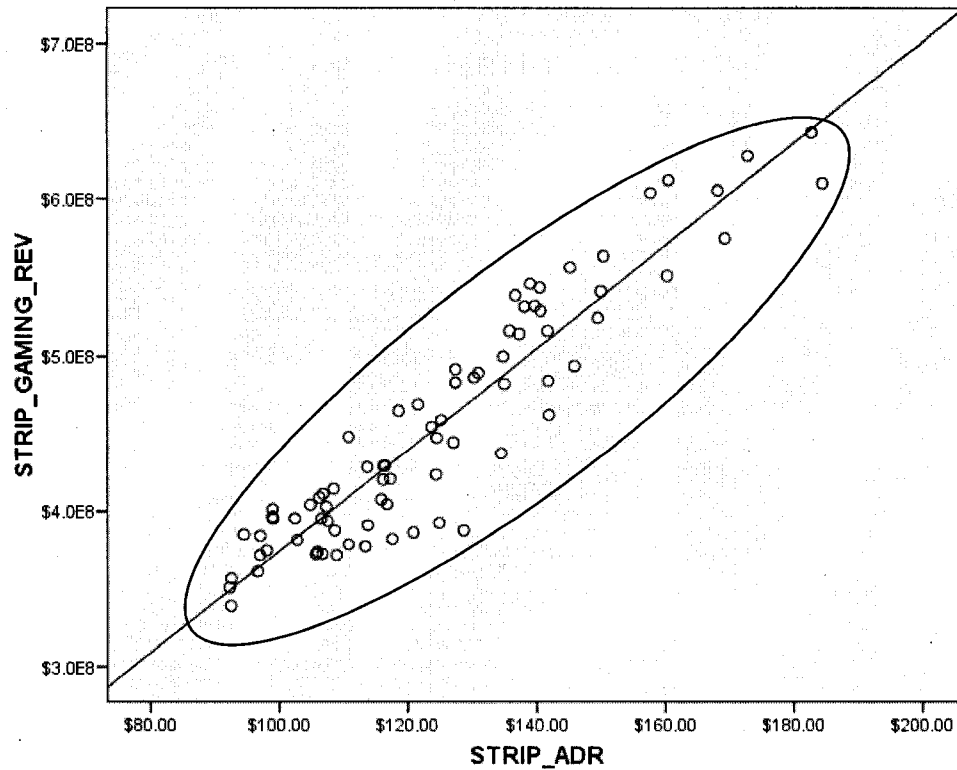
to the analysis. The linearity in the present study was tested through bivariate scatterplots. Figures 8, 9, and 10 show the scatterplots for each of the three independent variables in relation to the dependent variable. A linear relationship is shown by an oval scatterplot; therefore, an oval is superimposed over each scatterplot to demonstrate the linearity of each one.



*Figure 8.* Linearity test of the relationship between Strip Gaming Revenue and Strip Visitor Volume.



*Figure 9.* Linearity test of the relationship between Strip Gaming Revenue and Strip Hotel Occupancy Percentage.



*Figure 10.* Linearity test of the relationship between Strip Gaming Revenue and Average Daily Hotel Room Rate of Strip hotels.

To assess the degree to which each independent variable (SVV, SHO, ADR) was related to the dependent variable (SGR) and to each other independent variable, the correlation coefficient was calculated for each pair. The possible values of the correlation range from -1 to +1. At -1, the variables are perfectly negatively correlated; at +1, they are perfectly positively correlated. A correlation of 0 means no relationship exists. As shown in Table 3, the highest positive correlation (0.935) was between SGR and ADR.

Because three of the relationships produced relatively high correlations—greater than 0.500—namely, SGR and SVV (0.569), SGR and ADR (0.935), and SVV and SHO



Table 3

*Correlation Between the Variables*

Variable	SGR	SVV	SHO	ADR
SGR	1.000			
SVV	0.569**	1.000		
SHO	0.273**	0.629**	1.000	
ADR	0.935**	0.343**	-0.023*	1.000

Note. \* $p < .05$  \*\* $p < .01$

(0.629), the analysis of variance inflation factors (VIF) Table 5, was considered in order to check the degree of multicollinearity among the independent variables. As a general rule, a VIF greater than 5 is considered problematic (Snee, 1977). According to Tabachnick and Fidell (1996), “The greater the multicollinearity, the more unstable is the partial regression coefficient. Therefore, the likelihood that they are statistically significant is lower” (p. 45).

*The Relationship of the Independent and Dependent Variables*

The three hypotheses tested the assumption that significant positive relationships exist between SVV and SGR, SHO and SGR, and ADR and SGR. To test the hypotheses, multiple linear regression was used with SVV, SHO, and ADR as the independent variables and SGR as the dependent variable. As shown in Table 4, the probability of the  $F$  statistic (776.784) for the overall regression relationship is less than 0.001, well within the required significance level of .05. Consequently, the hypotheses are supported: the overall estimate is significant for each pair of variables—SVV and SGR, SHO and SGR,

Table 4

*Summary of Regression Analysis (n = 78)*

Variable	<i>R</i>	<i>R</i> <sup>2</sup>	Adjusted <i>R</i> <sup>2</sup>	<i>df</i>	<i>F</i>	<i>P</i>
SGR	0.984	0.969	0.968	3	776.784	0.000*

\* *p* < .05

and ADR and SGR ( $F = 776.784, p < .001$ ). Additionally, the adjusted  $R^2$  value of .968 indicates that the model accounts for 96.8% of variance in SGR, making this a very good model for predicting SGR.

*Significance of the Independent Variables*

Multiple regression produces a predictive model showing the influences of one or more independent variables on a dependent variable. The multiple regression equation is:

$$y = a + b_1 * x_1 + b_2 * x_2 + b_3 * x_3$$

where: *y* = dependent variable (SGR)

*a* = constant (i.e., when all independent variables = 0)

*b*<sub>1</sub>, *b*<sub>2</sub>, *b*<sub>3</sub> = coefficient of each independent variable (SVV, SHO, ADR)

*x*<sub>1</sub>, *x*<sub>2</sub>, *x*<sub>3</sub> = values of each independent variable (SVV, SHO, ADR)

Table 5 shows the result of the multiple regression analysis highlighting the significance of the independent variables: SVV, SHO, and ADR. The first number is the constant, or *Y* intercept, which is the height of the regression line when it crosses the *Y* axis. It is the predicted value of the dependent variable, SGR, when all of the independent variables are insignificant. The unstandardized coefficients, labeled *B*, are the dollar amounts of SGR affected by each unit increase in the variable. For example, for each increase of one

Table 5

*Significance of the Regression Coefficients (n = 78)*

Model	Unstandardized Coefficients		Standardized Coefficients		<i>p</i>	Collinearity Statistics	
	<i>B</i>	Std. Error	<i>B</i>	<i>t</i>		<i>T</i>	<i>VIF</i>
Constant	-\$377,545,686	\$30,547,482		-12.359	.000*		
SVV	\$64.938	\$15.173	.126	4.280	.000*	.476	2.100
SHO	\$3,294,857	\$426,967	.214	7.717	.000*	.540	1.853
ADR	\$3,132,162	\$80,265	.897	39.022	.000*	.787	1.270

\*  $p < .05$ 

Note. Dependent variable = Strip Gaming Revenue

person in SVV, \$64.938 is added to SGR. Similarly, for each 1% increase in SHO, SGR increases by \$3,294,857; for each \$1 increase in ADR, SGR increases by \$3,132,162.

The standardized coefficient, *B*, puts all the variables on the same scale rather than dollars for SGR and ADR, people for SVV, and percentages for SHO. All regression coefficients were significant ( $p = .000$ ), therefore all hypotheses tested in this study are supported by the model.

The tolerance values (*T*) are measurements of the correlation between the predictor variables. Values of *T* range from 0 to 1. The closer the *T* value is to 0, the stronger the relationship between that variable and the other predictor variables.

Variables with low tolerances are problematic; in the present study, the tolerances are not close to 0, as shown in Table 5. VIF, the reciprocal of *T*, is an alternative measure of collinearity. A large VIF suggests a strong relationship between predictor variables.

## Summary

In this chapter, the results of the multiple regression analysis were detailed and presented. In the final chapter, the findings are summarized, the model is presented and explained, and recommendations for future research are offered.

## CHAPTER 5

### SUMMARY, CONCLUSION, AND RECOMMENDATIONS

#### Summary

The purpose of this study was to test three hypotheses regarding the relationship between three independent variables—Strip Visitor Volume, Strip Hotel Occupancy Percentage, and Strip Average Daily Hotel Room Rate—and one dependent variable—Strip Gaming Revenue. The rationale behind this investigation concerns the substantial increase in the proportion of luxury hotels, casinos, restaurants, shopping, and entertainment in Las Vegas, especially on The Strip. Can the revenue specifically from gaming be increased over time in light of The Strip's relatively new emphasis on luxury and opulence?

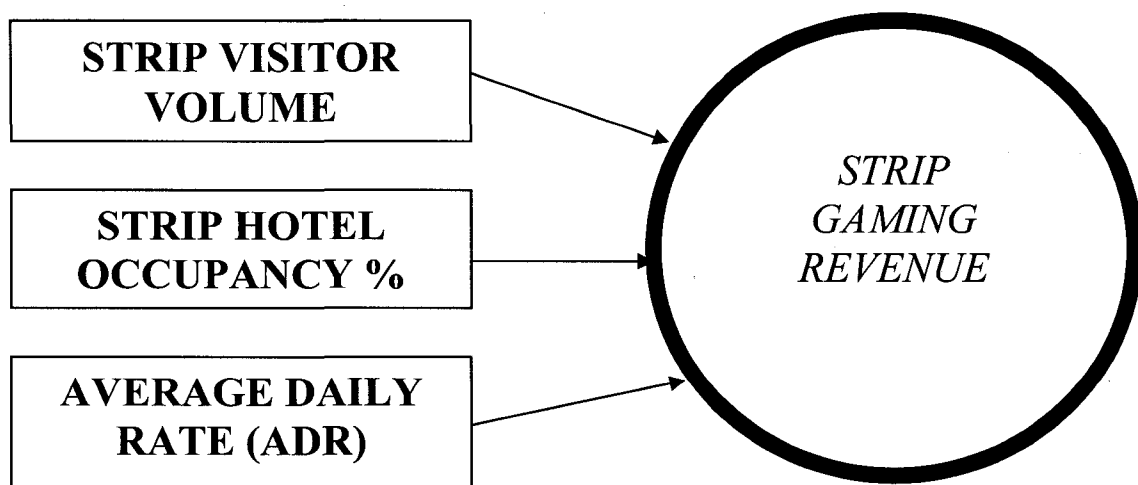
Data were collected from the Las Vegas Convention and Visitors Authority (LVCVA, 2008b) for the period January 2001 through June 2007, a span of 78 months. The average Strip Gaming Revenue for that period was \$454,479,371, roughly \$4.5 million per month. The mean monthly Strip Visitor Volume was 2.1 million, and the Strip Hotel Occupancy Percentage was 92.0%. The Average Daily Rate of a hotel room on the Las Vegas Strip during that time period was \$124.55.

Data were analyzed through multiple regression, controlling for the assumptions that underlie this form of analysis. All three hypotheses were supported at the 99%

confidence level ( $p = .000$ ). Moreover, 96.8% of the variance in Strip Gaming Revenue can be attributed to the variables of Strip Visitor Volume, Strip Hotel Occupancy Percentage, and Average Daily Rate of Strip hotel rooms (Adjusted  $R^2 = 0.968$ ,  $F = 776.784$ ,  $p = .000$ ). In summary, for each increase of one visitor to The Strip each month, approximately \$65 can be added to Strip Gaming Revenue. For each 1% increase in Strip Hotel Occupancy Rate, nearly \$3.3 million is added to Strip Gaming Revenue each month. Finally, for every \$1 increase in the cost of a hotel room, monthly Strip Gaming Revenue will increase by more than \$3.1 million.

### Conclusion

The variables of Strip Visitor Volume, Strip Hotel Occupancy Percentage, and Average Daily Rate of Strip hotel rooms significantly influence Strip Gaming Revenue. Consequently, increasing any of these three variables will, in turn, increase Strip Gaming Revenue. The following model is supported:



*Figure 11.* Influence of three variables on Strip Gaming Revenue.

It is not surprising to note that the obvious influences on Strip Gaming Revenue of the number of visitors and the hotel occupancy rate positively impact revenue from gambling. What is surprising, however, is that the increase in the average daily rate of the hotel also increases the bottom line for gaming. One would expect the opposite. If a visitor expends \$1 for accommodations, for example, then he or she does not have that \$1 for gambling. This finding is consistent with the concept and theory behind luxury tourism. It is not consistent with the theory behind vacation budgeting. In addition, the model developed in the present study has application to the concept of yield management for the hotel industry.

#### *Luxury Theory*

Macau, Dubai, and other international luxury gaming destinations are impressive, but the Las Vegas Strip has developed a reputation and a mystique unlike any other place. For this reason, the Las Vegas Strip continues to be at the top of American and international tourist destinations. Further, unlike these other gaming destinations which have sprouted from the ground in recent years, Las Vegas has been reinventing itself every few years since 1931, when gambling became legal in Nevada (Douglass & Raento, 2004). This “tradition of invention rather than the invention of tradition” (Douglass & Raento, 2004, p. 8) has led to the relatively recent up-scaling of The Strip especially since the opening of the Bellagio on October 15, 1998. It was the elegance and luxury of Steve Wynn’s Bellagio that set the stage and the tone for the Strip ventures of the decade that followed.

People who can afford it want luxury when they travel. They have the urge to splurge, and they wish to indulge themselves when they take vacations (Twitchell, 2002).

The income of visitors to Las Vegas continues to increase, from 17% above \$80,000 per year to 31% at a comparable level—about \$92,000 in current dollars (LVCVA, 2008b). In addition, Las Vegas has become the number one convention destination in the United States. Convention visitors have more money to spend due to expense accounts, and they spend it on accommodations, dining, and entertainment as well as gambling.

The Las Vegas Strip is also becoming a more attractive destination for young adults, and the proportion of visitors over 60 years of age is decreasing. Younger people, especially young upwardly mobile professionals (yuppies), look for a “hip” scene with clubs, entertainment, and good food. They want a lot of action and excitement.

It is sometimes hard for people without a lot of money to understand how people with a great deal of available resources behave, but luxury theory states that people with money spend it (Berry, 1994; Twitchell, 2002). For instance, upscale hotels have outperformed their lower-priced counterparts for nearly 10 years even when the tourism market is down and recession occurs. In addition, Jonathan Barsky, vice president of Market Metrix, commented, “An intuitive guess why luxury appears more recession-proof is that the well-off customers are typically less affected by economic downturns and not specifically affected by rising interest rates and mortgage problems. They absorb the costs more easily” (Gunter, 2008, ¶ 6). Further, tourists from other countries take advantage of favorable exchange rates and upgrade their accommodations to a luxury level (Gunter, 2008). Exceptional customer service, another expectation of luxury tourists, is more readily available in high-end hotels, and people are prepared to pay for it (Gunter, 2008). The model developed in this study supports luxury theory.



### *Vacation Budgeting Theory*

The model developed in this study does not support vacation budgeting theory. For instance, visitors to the Las Vegas Strip already spend about \$1,500 per trip excluding the cost of transportation to get here (LVCVA, 2008b). People going on vacation decide how much they will spend typically based on two factors: (a) time and (b) income (Divisekera, 2007; Nicolau & Más, 2005). While other socio-demographic and psychological factors may be at work in their decision making, the bottom line is still time and money. Further, increased expenditures on tourism have been attributed to three phenomena: (a) income growth, (b) reduced working hours, and (c) saturation of other forms of consumer spending (Hämäläinen, 2004). In simple terms, once people have bought all the stuff they want and have time and money available, they go on vacation, and the farther they go, the more they spend (Divisekera, 2007; Hämäläinen, 2004; Nicolau & Más, 2005). The task of Strip entrepreneurs is to make sure they take that vacation on The Strip, and the model in this study suggests that even though they spend more on hotel rooms, they will continue to spend more gaming, too.

Luxury connotes exclusivity, desirability, and high cost (Berry, 1994). In looking at the gaming industry in Mississippi, Moss et al. (2003) observed the necessity of moving a gaming destination forward: "More amenities must be offered to attract and keep gamblers and conventions in a flat market" (p. 398). The options available for increasing amenities are: (a) food and drink, (b) accommodations, (c) clothing and apparel, and (d) leisure activities (Berry, 1994; Twitchell, 2002). To turn these four options from necessities into luxuries, the qualitative differences of comfort, "pleasing-

ness,” and desirability must be added. Most often, the quantitative difference is price (Twitchell, 2002).

Luxury travelers vary in their degree of wealth. According to Ikkos (2004), there are “Tycoons,” capable of fulfilling all of their vacation fantasies; “Very Rich People,” who demand impeccable door-to-door, confidential, personalized, and individualized service; and “Rich People,” who are probably still working and demand value in the services they receive. Ikkos (2004) further identified five types of luxury-related travelers: “Elite Luxury Lovers” who seek image, status, and exclusivity; “Aspiring Luxury Lovers” who are like the Elite Luxury Lovers, but they do not have the money to back it up; “Savvy Luxury Shoppers,” shrewd customers who seek value for their money, bargains, and discounts; “Luxury Explorers” who seek unique experiences with intense feelings, senses, and sounds in unusual environments; and “Satisfied Luxury Admirers” who are usually older and have money, but do not necessarily wish to have these things for themselves. What is common among all categories of the wealthy and the luxury seekers is that they want the best product for their money. As Twitchell (2002) so aptly stated,

Somehow these disparate aspects of public and private luxury are coming together in postmodern Vegas: the importance of textured experience, manipulated indulgence, isolation, increasing levels of private affirmation, and, most of all, a dream world where some kind of subtle reaffirmation and redemption occurs just by being there. The one thing Vegas luxury is not is simple. It is layering itself down over other experiences. (p. 257)

#### *Summary of Tourism Budgeting Theory in Relation to the Model*

Two major theories of budgeting operate around tourism (Berry, 1994; Divisekera, 2007; Ikkos, 2004; Nicolau & Más, 2005; Twitchell, 2002). The first is that people have a certain amount of time and income available which they can spend on a

vacation. Other factors constrain the ability or desire of people when it comes to spending their time and money while they are on vacation. They might have large families with them, or they might not see the value of fine dining, gambling, or shopping. The second theory concerns luxury. People who have high incomes value vacations in a different way and choose to spend their money on luxurious items or activities. They enjoy fine dining, shopping in exclusive stores, and gambling high stakes. They like their accommodations to be elegant with exceptional customer service.

The model developed in this study cites Strip Visitor Volume (SVV), Strip Hotel Occupancy Percentage (SHO), and Average Daily Rate (ADR) of Strip hotel rooms as predictive contributors to Strip Gaming Revenue (SGR). For each person added to SVV, about \$65 is added to SGR each month. Similarly, for every 1% increase in SHO, SGR increases by about \$3.3 million. Further, for each \$1 increase in ADR, SGR increases about \$3.1 million per month. While the increases in SVV and SHO appear intuitive, the increase in ADR is counter to standard vacation budgeting theory.

Standard vacation budgeting theory suggests that \$1 spent on a hotel room will not be spent on gaming or any other product, service, or activity. However, the present model shows that \$1 spent on the hotel room leads, in fact, to increased spending. This is consistent with luxury spending theory. Therefore, this model supports luxury theory; it does not support traditional beliefs about vacation budgeting. This model demonstrates that the up-scaling of the Las Vegas Strip has contributed positively to Strip Gaming Revenue and will most likely continue to do so because luxury tourism is recession-proof (Gunter, 2008).

### *Yield Management in Relation to the Model*

Yield management is “the practice of maximizing profits from the sale of perishable assets, such as hotel rooms, by controlling price and inventory and improving service to selected customer segments” (Norman & Mayer, 1997, p. 29). The concept of yield management is critical for the ability of a company to gain revenue from inventory that would remain unsold if steps were not taken to sell it. It is an important concept because it enables a company to maximize its profits in order to regain capitalization costs, such as those involved in the luxury building movement currently at work on the Las Vegas Strip.

Norman and Mayer (1997) contended that yield management “encompasses the functions of selling and fulfilling reservations, managing databases, forecasting, pricing, marketing, and measuring results” (p. 29). The model developed in this study is a forecasting model related to the pricing of hotel rooms that will yield increased gaming revenue. Consequently, this model is important to the practice of yield management through price determination at the point of room reservation. In fact, this model supports the importance of consideration of the relationship between hotel room revenue and gaming revenue.

### *Limitations of the Study*

Like most research, this study had limitations. The most obvious limitation is the 78-month period of study from January 2001 through June 2007. Data for the last 12 months are not yet available, and certain factors may affect Strip gaming revenue as a result. For instance, gas prices have skyrocketed. People come to Las Vegas either by car

or by airplane and the cost of both these modes of transportation continues to escalate. In addition, fewer flights to Las Vegas are available as a result of increased airline costs which are also passed on to consumers. One major variable in the present model is visitor volume; the number of visitors may decrease as a result of rising transportation costs and other economic variables.

Another limitation is the use of only three variables as contributors to Strip gaming revenue. In addition, visitor volume and hotel occupancy rates are clearly related to one another. One could argue that these two variables alone should influence and predict gaming revenue. Perhaps other predictor variables should be considered and/or perhaps other revenue sources, such as hotel room revenue, might also be good predictors of gaming revenue.

### Recommendations for Future Research

The most important recommendation coming out of this study is to repeat the study with data from the period from July 2007 through June 2008. The reason is to determine if changes in the economy and the tourist industry have had an impact on the revenue model. Another option is to conduct the same study using data from different markets such as Atlantic City, Europe, Macau, Australia, or other gaming destinations. A third change would be to examine different periods of time or longer or shorter periods of time to see if the findings hold true under short- and long-term conditions.

It is also important to consider marketing strategies. Zaltman (2003) contended that marketers can not accurately anticipate consumers' responses to products and services offered to them without a deeper understanding of consumers' hidden thoughts.

Consequently, this understanding should form the basis of marketing strategies. In the upscale market, the metaphor behind the product or service is a critical component of a marketing strategy. Such metaphors have the ability to unearth the hidden thoughts and feelings that profoundly influence the decision making of consumers. Research could be done on the metaphors of luxury that influence marketing strategies.

Because each person who comes to the Las Vegas Strip has such an important impact on gaming revenue, it is important to continue to study the effects of every component of the economy on tourist revenue. Moreover, because the tourism industry is the main source of income for the state of Nevada which currently faces a \$1.2 billion tax revenue shortfall (Governor Jim Gibbons, TV broadcast, June 27, 2008), monthly tallies of visitor volume, hotel occupancy, airport traffic, retail sales, and gaming revenue become all the more important to understand for the prediction of tax revenue. Further, with the unknown effects of real estate downturns, raising prices of gasoline and food, and the decreased financial ability of people to travel, the ultimate effect on Strip gaming revenue has not been determined. Changes in the economy necessitate better predictability of Strip gaming revenue; therefore, other models should be considered in addition to the one offered by the present study.

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## VITA

Graduate College  
University of Nevada, Las Vegas

Dominik Kuna

### Local Address:

1 Hughes Center Drive, 1501 D  
Las Vegas, Nevada 89169

### Degrees:

Bachelor of Science, International Business, 2004  
Minor: Economics  
Kean University, NJ, USA

Thesis Title: The Upscaling of Las Vegas: An Examination of Increased Gaming Revenue

### Thesis Examination Committee:

Chairperson, Curtis Love, Ph.D.  
Committee Member, Carola Raab, Ph.D.  
Committee Member, Pearl Brewer, Ph.D.  
Graduate Faculty Representative, John A. Schibrowsky, Ph.D.