Comparing loyalty program tiering strategies: An investigation from the gaming industry

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Abstract

Loyalty programs are popular marketing strategies developed for the purpose of attracting, maintaining, and enhancing customer relationships. Due to the explosive worldwide growth of, and increased competition within, the casino industry has compelled contemporary casino marketers to rely more heavily on loyalty programs to increase guest allegiance and the frequency of repeat visits from their customers. Despite the widespread usage of loyalty programs across various gaming businesses in Las Vegas, its effectiveness has not quite been validated. The purpose of this study is to examine customers' behavioral loyalty within the Las Vegas gaming industry and examine the effectiveness of a specific loyalty program using secondary data obtained from a Las Vegas casino hotel. Specifically, this study segmented loyalty program members to investigate the effectiveness of a casino loyalty program's tiering strategy on members' purchase behavior. Further, this study employed Recency-Frequency-Monetary (RFM) analysis to examine two different types of tiering strategies.

Keywords: behavioral loyalty, customer loyalty, casino loyalty program, tiering strategy, RFM analysis, segmentation

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Introduction

Las Vegas is an internationally renowned city for gambling, fine dining, entertainment, and shopping. After enduring a deep drain during the economic recession, the local gaming industry managed to recover in 2010, with increases in both visitor volume and gaming revenue. As of 2015, the city recorded 42.3 million visitors, more than 3 million of the city's 2007 peak; with a room inventory of approximately 150,000, it experienced higher occupancy rates than any other tourist destination in North America. Competition in the Las Vegas gaming industry has been intense due to explosive growth amid economic challenges. At present, Las Vegas is well positioned for continued growth, generating new opportunities and challenges for business management (Las Vegas Convention and Visitors Authority (LVCVA), 2016). Business operators have been relentlessly seeking more sophisticated ways to increase visitor volume and gaming revenue to remain profitable. It has been recognized that the value of loyal customers is especially significant in the gaming industry; consequently, casino marketers have been increasingly dependent on loyalty programs to maintain market share and increase customer loyalty (Barsky, 2010; Benston, 2011; Crofts, 2011; Hendler & Latour, 2008; Lucas et al., 2005; Min et al., 2015; Tanford & Baloglu, 2012).

Increased competition has driven businesses to develop marketing strategies to attract and retain valuable customers (McCall & Voorhees, 2010). Loyalty programs are one such popular marketing strategy developed to encourage repeat business and ultimately increase customer loyalty (Dowling & Uncles, 1997). Service providers believe customer loyalty to be not only a powerful impact on performance and profitability, but also a source of competitive advantage (Kandampully, 1998; Petrick, 2004; Reichheld & Sasser, 1990; Shoemaker & Lewis, 1999).

Almost every type of business offers some type of loyalty program, and companies from various industries are challenged with an abundance of this practice (McCall & Voorhees, 2010). The implementation of loyalty programs within the gaming industry in Las Vegas was comparatively slow compared to other service industries, as marketing was not a necessary tool until the so-called mega resort era started in the 1990s (Baynes, 2011). Due to explosive growth and market maturity, casino marketers today realize the importance of customer retention and rely highly on their loyalty programs to bond customers to the brand or generate an additional trip by rewarding their most valuable customers (Barsky, 2010; Lucas et al., 2005; Min et al., 2015).

However, inconsistent findings across various studies compel one to ask whether loyalty programs were employed as part of a marketing strategy or simply provoked by competition (e.g., Meyer-Waarden, 2008; Uncles, Dowling & Hammond, 2003) and the question of whether these programs are really effective remains open (Barsky, 2010; Danaher, Conroy, & McColl-Kennedy, 2008; Leenheer, 2002; Lewis, 2004; Reinartz & Kumar, 2002; Whyte, 2004). Basically, loyalty programs are designed to encourage further transactions by offering different sets of incentives to customers at different tier levels based on their purchasing behavior. Ultimately, the tiering strategy plays an important role in a loyalty program's success (Berman, 2006; Liu, 2007; McCall & Voorhees, 2010). Previous studies on casino loyalty programs discovered that management lacked an understanding of how to make better use of the program (Hendler & Latour, 2008), and realized that program members are not necessarily classified by their actual value or performance (Yoo & Seo, 2012). Nevertheless, marketers have devised creative ways to boost the effectiveness of loyalty programs (Hendler & Latour, 2008).

The purpose of this study is to segment loyalty program members and investigate the effectiveness of a casino loyalty program's tiering strategy on their purchase behavior. Further, this study employed Recency-Frequency-Monetary (RFM) analysis to examine two different types of tiering strategies: card tiers and RFM tiers. Card tiers refer to the membership card levels initially segmented by the casino loyalty program. RFM tiers refer to the new tier levels that were created by employing RFM analysis. RFM tiers were compared to card tiers in an effort to identify which tiering strategy effectively reflected the significant factors of behavioral loyalty.

While there are several dimensions to consider when measuring customer loyalty, this study specifically focused on the behavioral loyalty of casino patrons. Loyalty programs are specifically designed to encourage behavioral changes such as increased share of wallet, repeat purchase rate, and usage frequency (Sharp & Sharp, 1997); thus, it is critical to identify whether these goals are achieved by constantly checking the changes on members' purchase behavior. Behavioral loyalty measures have some advantages in providing realistic information (Bolton, Kannan, & Bramlett, 2000; Chao, 2008) and a deeper understanding of behavioral loyalty allows businesses to make decisions concerning strategic marketing activities for loyalty program effectiveness (Liu, 2007).

Despite strong interest, there has been limited empirical academic work investigating the impact of loyalty programs on real customers' behavior due to limited data, especially within the gaming industry (Lucas, 2011; Meyer-Waarden, 2008; Sharp & Sharp, 1997). Loyalty program research is difficult because of limitations such as self selection bias and the lack of a control group. Self selection bias occurs when regular users (those who already have been frequently using the brand) of a product enroll in a loyalty program. Comparing members to non-members could be misleading since those who do not enroll in a program are more likely to be occasional users (those who scarcely use the brand) and it is an extremely demanding task to obtain data from non-members. Restrictions in the ability to exactly model causation exist because there are numerous factors that may influence loyalty (Acatrinei & Puiu, 2012).

This study is expected to contribute academic value in that it fills a void in the gaming literature of empirical research associated with the relationship between loyalty programs and their effect on the behavioral loyalty of casino patrons. Findings are of practical significance in that they may provide applicable insights to casino marketers for the improvement of current loyalty programs. In addition, findings may assist in the development of more strategic and successful marketing tactics to proactively maintain the most loyal customers, as well as a deeper understanding of the constructs that comprise behavioral loyalty.

Literature Review

Casino Loyalty Marketing

Marketing became a critical profit-generating activity in the Las Vegas gaming industry as competition within the industry dramatically increased through the continuing expansion of casinos and elaboration of gaming products in Las Vegas (Lucas et al., 2005; Lucas & Kilby, 2008; LVCVA, 2016). Implementation of effective marketing strategies became indispensable due to several periods of explosive growth, fueled by multi-million dollar structural investments, and challenges such as economic downturns and terrorist threats. Mixtures of monetary offers (e.g., gaming chips, complimentary offers, free-plays, match-plays), special events, sweepstakes, and other miscellaneous incentives have frequently been employed in an effort to increase guest traffic, spending-per-trip and incremental revenue (Lucas & Kilby, 2008; 2011; Suh, Dang, & Alhaery, 2013; Tanford & Suh, 2013).

Generally, most consumers are recognized as polygamous loyal shoppers (Dowling & Uncles, 1997). With a diversity of mega casino resorts, it is likely that customers are not loyal to a single property in Las Vegas (Lucas et al., 2005). Customers became loyal to the deal rather than the brand (Lucas et al., 2005; Lucas & Kilby, 2008; Suh, 2012). While gaming demand has steadily increased, and revenue is driven relatively easier in Las Vegas (LVCVA, 2016), casino marketers are more concerned with profit-per-trip, as it is a more exigent profit-generating metric (Gu, 2003; Lucas et al., 2005). Patrons have many more product and service alternatives from which to choose, and marketing efforts based solely on physical attributes, luxurious facilities or short-term promotions is no longer sufficient to ensure survival in the Las Vegas gaming environment. As a result, casinos have endeavored to become more "customer centric" by incorporating various customer relationship management tools and systems to maximize return on investment and increase customer loyalty (Kale, 2003; 2005; Lucas et al., 2005; Lucas & Kilby, 2011).

Loyal customers are known to be less price-sensitive and less likely to be attracted by promotional activities (Petrick, 2004). It has been recognized that loyal patrons tend to visit a property more frequently than non-loyal patrons and, as the number of visits increase over time, their purchase amounts per trip tend to increase. They also bring in new customers through positive word-of-mouth, and businesses can ultimately save a substantial amount on advertising expenses. (Haywood, 1988; Petrick, 2004; Shoemaker & Lewis, 1999). Petrick (2004) argued that loyal customers are more than just a secure economic source, but they can also be information channels that create a linkage to their friends, relatives, social group, and other potential travelers to a property or destination. Hospitality businesses acknowledge customer loyalty as a long-term sustainable competitive advantage, especially as segments mature and competition intensifies (Bolton et al., 2000; Shoemaker & Lewis, 1999). Typically, casinos have attempted to increase customer loyalty by building customer relationships using database management (Kale, 2003; Lucas & Kilby, 2008; 2011).

Similar to many other businesses, the majority of profits are generated from a select group of customers in the gaming industry. For example, 5% of high rollers produce 40% of the gross gaming revenue (Lucas, Kilby & Santos, 2002). Rooted in the 80/20 rule (Pareto, 1897), casino marketing activities strive to focus on the most valuable players to increase profitability. Kale (2003) examined the categorization of casino customer segments and found only a small volume of guests were truly loyal and profitable to the casino, and that very segment generated more than twice the gaming revenue of other segments when there was a like retention rate increase. Watson and Kale (2003) also discovered that 3% of the casino patrons generated approximately 90% of the table games revenues. These studies show that a relatively smaller portion of guests yielded a return on investment comparable to other industries and emphasize the significance of loyal customers in the gaming industry.

Customers who generate the highest profits become even more loyal and profitable if they benefit from the value they create (O'Brien & Jones, 1995). Hence, casinos recognize the importance of rewarding their most faithful patrons with the best value to maximize loyalty and profitability (Barsky, 2010). However, the challenge is to better serve their most valuable customers without overtly discriminating against less valuable customers. All customers are not equally valuable, so it is neither economically nor operationally reasonable for businesses to expand their value proposition to everyone (Reichheld, 1996). Companies may waste resources if they over-satisfy less valuable customers and under-satisfy those of greater value (O'Brien & Jones, 1995).

Casino Loyalty Programs

Loyalty programs, as one of the most common customer loyalty schemes, ultimately enable firms to create a relationship that is based on interactivity and individualization accompanied by personalized direct marketing techniques and communication (Shapiro & Varian, 2000). Loyalty programs were first introduced as slot clubs in the Las Vegas gaming industry in the early 1980s, but the practical utilization was much more slowly embraced compared to other service industries (Lucas et al., 2005; Lucas & Kilby, 2008). While there were a few early adopters spending millions of dollars to install player-tracking systems, most of the casinos in Las Vegas believed it diminished the individual attention that guests desired (Baynes, 2011). Within the past decade, nearly every casino in the United States is offering a loyalty program (Barsky, 2010). Casino loyalty programs normally provide a membership card that records all gaming transactions and demographic data. Customers accumulate reward credits (points) based on their gaming activities and may redeem those credits for complimentary offers on hotel accommodations, dining, entertainment, and even gaming chips. Meanwhile, casino marketers use the transactional data to estimate the value of players and to structure offers and rewards (Barsky, 2010; Lucas & Kilby, 2008; Min et al., 2015).

Several gaming studies noted that such marketing efforts were only successful in generating incremental trips and generated negative cash flows because of the expensive cost in the long run (Lucas, 2004; Lucas & Brewer; 2001, Lucas & Bowen, 2002; Lucas et al., 2005; Marfels, 2010; O'Donnel, Lee, Roehl, 2009; Suh, 2012). Overall, research indicates that customers' purchase intentions decline radically when incentives are no longer available, while higher promotion redemption rates are related less to brand loyalty and more to deal proneness (Lewis, 2004; Taylor & Long-Tolbert, 2002). Therefore, a sophisticated player tracking system is recommended to merge all the patrons' play and redemption rates, and a strategic marketing plan is critical in effectively managing the casino's loyalty program (Lucas & Kilby, 2008).

There are different types of loyalty programs, but the fundamental idea is to encourage customer purchase by doling out rewards and providing targets at which various benefits can be achieved (O'Malley, 1998). Simpler types of loyalty programs award discounts for each purchase or every nth purchase (e.g., grocery stores, local car wash). More complex programs reward customers by cumulative purchases or historical purchase level (Berman, 2006). To enhance effectiveness, casino loyalty programs are designed with several tiers of customer rewards based on historical play. Tiered programs provide differential incentives based on customers' gaming activity, most commonly by purchase frequency or transaction size (Berman, 2006; Liu, 2007; Rigby & Ledingham, 2004), and aim to better compensate customers with higher purchase levels (McCall & Voorhees, 2010). Tiered programs require a comprehensive database of customers' purchase history, but allow firms to eventually reduce costs when they are well-designed by properly targeting the beneficial segments, while simultaneously discouraging the segments that are not as cost-effective (McCall & Voorhees, 2010; O'Brien & Jones, 1995; Tanford, 2013).

Loyalty program members are known to accelerate purchase behavior both in frequency and magnitude as they approach the next tier (Kivetz, Urminsky, & Zheng, 2006). Delivering enhanced value to profitable customers can turn them into loyal customers, and those loyal customers become even more profitable over time. Ultimately, the effectiveness of loyalty programs is evaluated in terms of purchase loyalty, specifically in repeat purchase amount (total dollar amount), increased usage frequency, and decreased switching to non-program brands (Ehrenberg, 1988; Ehrenberg, Goodhardt, & Barwise, 1990; Leenheer, Van Heerde, & Bijmolt, 2007; Liu, Meyer-Waarden, 2007; 2008; Min et al., 2015). It is important to recognize how tiered members

may respond differently to a loyalty program: in general, heavy users tend to be more favorable towards loyalty programs than light users, as programs are typically designed to be more beneficial for those who spend more (Lal & Bell, 2003). Depending on the patrons' usage level, loyalty programs can become more or less attractive, and thus should be measured (Kim, Shi, Srinivasan, 2001; & Liu, 2007).

Determinants of Customer Loyalty

Loyalty is perceived as a two-dimensional concept comprising behavioral (e.g., repeat purchase) and attitudinal loyalty (e.g., favorable attitude towards the brand) (Backman, 1988; Dick & Basu, 1994). Behavioral loyalty can be quantified through antecedents such as actual consumption, frequency, share of wallet, duration, recency and word-of-mouth recommendations (Baloglu, 2002; Leenheer et al., 2007; Mechinda, Serirat, & Guild, 2008; Petrick, 2004). The attitudinal perspective measures loyalty as an affinity toward a brand and indicates trust, psychological attachment, and emotional commitment (Mechinda et al., 2008; Petrick, 2004). Bowen and Shoemaker (2003) suggest that building trust and commitment is the key to developing loyalty. However, attitudinal loyalty can be criticized because it lacks power in predicting actual purchase behavior (Backman & Crompton, 1991; Morais, 2000).

Although customer loyalty is a multifaceted construct, behavioral loyalty plays a central role because it has a direct impact on a firm's bottom line and facilitates assessment of profitability (Chao, 2008). Research has also suggested that behavioral loyalty is the ultimate concern, emphasizing that it involves the actual consumption of the service and indicates future purchasing intentions (Jones, Reynolds, Mothersbaugh, & Beatty, 2007; Kim, Jin-Sun, & Kim, 2008; Tanford, Raab, & Kim, 2010). Studies also suggest that companies must quantify consumers' purchase behavior in order to determine the effectiveness of a loyalty program (Bolton et al., 2000; Lewis, 2004; Liu, 2007). For the purpose of this study, recency, frequency, and monetary size were applied to measure behavioral loyalty.

Recency. Recency is the interval between the last purchase and the current purchase. Direct marketers discovered that consumers who bought more recently were more likely to respond to new offers than those who purchased a long time ago (Hasouneh & Alqeed, 2010). Accordingly, marketers believe most recent purchasers are more likely to purchase again than less recent purchasers. Recency has been effectively applied as an explanatory variable in customer segmentation and consumer behavior studies (Hosseini, Maleki, & Gholamian, 2010; Hughes, 1996). Recency is defined as the number of days since the last visit.

Frequency. Frequency is the total number of visits or purchases made. Member's total number of trips (visit frequency) was used to identify frequency. Frequency was expressed as the total number of trips the patron made to the casino.

Monetary Size. Monetary size is the total volume of expenditures. Monetary size was assessed by monetary expenditure on slot games (slot expenditure), table games (table expenditure), and elsewhere (other expenditure). Slot expenditure (also known as coin-in) is represented in the total dollar amount of wagers accumulated by each slot machine. Slot coin-in has been used frequently in previous studies, and is recognized as the most accurate indicator to measure gaming volume (Eisendrath, Bernhard, Lucas, & Murphy, 2008; Lucas et al., 2005; Lucas & Bowen, 2002; Lucas & Tanford, 2010). Table expenditure (also known as drop) is represented as the dollar amount of chips purchased for table games. Despite the fact that table game drop is difficult to record reliably (Eisendrath et al., 2008), previous studies have used it to determine table game volume (Lucas, 2004; Lucas & Bowen, 2002). Table expenditure was included in this study

because of the significant amount of revenue produced from table games in the specific casino property where data was obtained. Both slot coin-in and table drop were converted into revenue for the casino, thus, reflect how much patrons spent in total. 'Other expenditure' represents any other monetary outlay excluding gaming, such as food and beverage, entertainment and hotel rooms. While patrons do not earn any points from other expenditure, it was included because it also reflects the total volume of expenditures. In the analysis to follow, slot expenditure, table expenditure and other expenditure was cumulated into a single variable.

RFM Analysis

RFM stands for recency, frequency, and monetary size. Recency refers to the time of the most recent purchase (Blattberg, Kim, & Neslin, 2008). It is particularly important to consider recency because a longer purchase inactivity is more likely to signify that the customer ended the relationship or switched to a competitor (Dwyer, 1989). Frequency refers to the number of purchases, and monetary size refers to the purchase amount (Blattberg et al., 2008). RFM analysis is a marketing technique to identify customer behavior by typically assigning an RFM score to each customer record based on purchase history (Hughes, 1996). It utilizes recency, frequency, and monetary size because these variables have been repeatedly shown to positively impact consumer's purchase behavior (Blattberg et al., 2008). The fundamental premise underlying RFM analysis is that those customers who purchased more recently tended to make more purchases, and those who made larger purchases were more likely to respond to promotions and other offers than those who purchased less.

Data mining applications based on RFM analysis have been popularly implemented among marketers to segment existing customers in order to increase comprehension of consumer behavior and to glean additional insights about the market. It allows one to categorize customers based on their potential for profitability and determine how to invest in marketing towards them (Asllani & Halsted, 2011; Blattberg et al., 2008). On the whole, RMF analysis has been a useful tool for direct marketers to improve segmentation strategies, allocate marketing resources more effectively and increase customer loyalty (Wu, Chang, & Lo, 2009).

RFM analysis offers a number of advantages. It is simple, relies on data that is relatively easy and basic to track, is intuitive and does not require sophisticated analysis or software. Bhaskar, Subramanian, Moorthy, Saha, and Rajagopalan (2009) were able to provide practical insights for a multiplex in offering promotions effectively for their loyalty program by using RFM analysis. Asllani and Halsted (2011) also employed RFM analysis on a sample of purchasing data and indicated that marketers can make optimal solutions future promotional investments through its utilization. RFM has been applied in various other industries such as the automobile, retail, and service and has been shown as an effective approach to predict response and further improve profitability (Chan, 2008; Chen, Kuo, We, & Tang, 2009; Cheng & Chen, 2009).

Research Hypotheses

Generally, casino loyalty programs consist of hierarchical card levels, determined by the total number of points accrued. Higher level card members are expected to reveal higher usage levels than lower level card members. Based on findings from the loyalty program literature, it is expected that a member's card level affects purchase behavior, where accumulation of points increases opportunities for rewards. Thus, this study attempted to test whether card tiers actually stimulates a members' behavioral usage level. Behavioral usage level was examined specifically in terms of purchase frequency, monetary size, and purchase recency. Overall, the following theoretical model has been developed (Figure 1) and the study hypotheses derived:

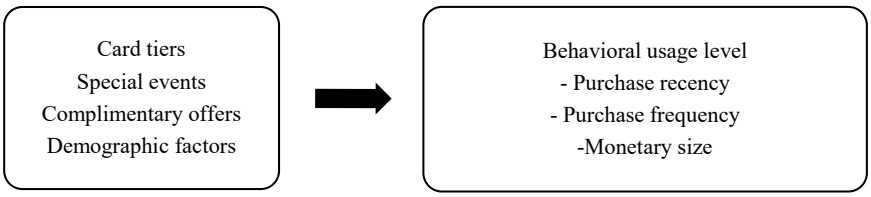

Figure 1. Theoretical model

H1: Card tiers will have a significant effect on members' behavioral usage level.
H1a: Card tiers will have a significant effect on members' purchase recency.
H1b: Card tiers will have a significant effect on members' purchase frequency.
H1c: Card tiers will have a significant effect on members' monetary size.

Methodology

Data Collection

Secondary data was obtained from an upscale Las Vegas Strip casino loyalty program. Like any other Las Vegas mega-resort, the casino offers facilities such as hotel rooms, convention, shopping, dining, spa, and entertainment. The loyalty program consists of three card levels and members are upgraded from the points they earn. Members may enroll in the program for free and they may build and maintain their status for one calendar year. Each level requires a minimum amount of points to be earned annually for the status to be maintained during the following year. However, while there are two main types of games (slot machines and table games) at the casino, members of the loyalty program earn points solely from playing slot machines.

Few studies have considered the moderating effects of tiers to evaluate loyalty program effectiveness on purchase behavior; among those who have, the generality of their conclusion was limited by such factors as the use of self-reported data (Leenheer et al., 2007; Meyer-Waarden, 2007; 2008) or a focus on short-term promotions (Lal & Bell, 2003; Lewis, 2004; Taylor & Neslin, 2005). This is one of the very few studies that have attempted to investigate the moderating effects of tier levels to understand the effectiveness of a loyalty program in the gaming industry.

Loyal customers were defined as those with an average of at least two trips per year (Lewis, 2004; Liu, 2007). Patrons who first joined the loyalty program in January 2011 were purposely selected to eliminate already 'loyal' users; i.e., some regular consumers may have decided to join a certain loyalty program just to take advantage of its rewards or benefits. There is concern that the true effectiveness of the program may be biased if such patrons were included (Leenheer et al., 2007; Moufakkir, Singh, Moufakkir-van der Woud & Holecek, 2004). International customers and local residents were not included in the sample as they were marketed differently from the domestic

market. Members were classified into geographic residential areas within the database, and patrons who lived in border states (California, Arizona) comprised more than 50% of the entire database. Only patrons who lived in the border states were selected into the final sample because they showed higher visit frequency than those who lived further away. It was important to keep this criterion consistent throughout the study as recency was used as dependent variable. After these criteria were met, a random sample of 450 loyal patrons who visited the casino from January 2011 to December 2011 was extracted from the database. Patrons who had missing values were removed when data were scanned.

Data Measurement

Dependent Variables. Purchase frequency and transaction size are used to quantify purchase behavior. Purchase frequency indicates the number of purchases and is expressed as frequency (F). Transaction size indicates the spending volume and is represented as monetary size (MS) (slot expenditure + table expenditure + other expenditure). Recency (R) is represented by the number of days since the last trip. An average value was computed since patrons made multiple trips.

Explanatory Variables. The main explanatory variable in this study is card tiers. Previous studies discovered that consumers' behavior varies depending on their usage levels (Kale, 2003; Lal & Bell, 2003; Liu, 2007). The current casino loyalty program consists of three card tier levels (level 1 being highest, and level 3 being lowest). Card tiers is determined by points accumulated and symbolizes a patron's status. Patrons receive different types of benefits and incentives based on their card tiers.

Special events are known to have a significant impact on attracting customers to casinos and affect gaming volume (Lucas, 2004; Lucas & Bowen, 2002; Lucas, Dunn, & Singh, 2005; Lucas & Tanford, 2010; Suh et al., 2014). Special events refer to tournaments, concerts, shows, and player parties/events, and they were included as the total number of counts for each member. Members with higher loyalty card tiers were offered with a higher number of special event invitations.

Complimentary offers are free items or service given from the casino, which also influence trip expenses or gaming expenses (Lucas et al., 2005; Suh et al., 2014). Complimentary offers were represented in retail value and consisted of 1) the total value of complimentary offers including room, food & beverage, or shopping awards in U.S. dollars, and 2) the value of gaming credits in U.S. dollars. Complimentary offers indicate incentives that are not included in promotions or special event offers. Members may be rewarded complimentary offers additionally based on their current play level when they visit the casino. Lastly, demographic factors such as gender and age were included as explanatory variables as they were identified to impact gaming behavior from previous studies (Yoo & Seo, 2012).

Method and Data Analysis

Data was imported into R, an open-source statistical programming environment (The R Core Team, 2015), and ordinary lease squares (OLS) regression analysis was used to test whether card tiers affected members' behavioral usage level. Residual diagnostics showed that the normality of residuals and constant variance, standard assumptions for multiple regression, were violated. Econometrics literature (Zeileis, 2004) recommends using suitable heteroskedasticity consistent (HC) estimators of the covariance matrix for testing significance of the parameters in the model. The R package *sandwich* was used for this purpose.

Next, this study employed RFM analysis to segment the sample into RFM tiers. Then, principal component analysis (PCA) was performed to visually examine the relationship between tiers (both card tiers and RFM tiers) and behavioral usage (R, F, and M). RFM analysis calculates an RFM value score for each record based on historical purchase behavior. Customer transaction records are scaled on the factors of recency, frequency, and monetary size into quintiles to compute the RFM value. Patrons' records are sorted and scored for each variable from highest to lowest; i.e., a value in the top 20% is assigned a score of 5, the next 20% a score of 4, and so on to the bottom 20%, a score of 1. A customer's score can range from a high of 555 to a low of 111, each digit corresponding to a score associated with recency, frequency, and monetary size, respectively, resulting in a total of 125 (5x5x5) potential scores. For frequency and monetary size, higher values indicate more visits and more purchase amount, thus, would receive a higher score. However, for recency, scores were reversed since higher values indicate longer gaps between trips. Longer gaps between trips would receive a lower score than shorter gaps between trips. On the whole, higher RFM scores would indicate more recent visits, a larger number of visits, and more spending (Hughes, 1996).

Data Analysis and Results

Sample Profile

Table 1 describes the profile of the sample data. Overall, the final data set included a total number of 450 patrons. Nearly half of the patrons were in the age range between 40 and 59 years old. Approximately 21% were between 30 and 39 years old and 13.3% were between 60 and 69 years old. Almost 10% were between 20 to 29 years old and 6.9% were over 70 years old. Most patrons were male, representing approximately 64% of the sample. The vast majority lived in California, representing roughly 93% of the sample. Patrons who lived in Arizona comprised about 7%. There are three card levels for the loyalty program, 1 being the highest level and 3 being the lowest level. More than 75% were level 3 members and only 0.7% were level 1 members. However, the actual casino loyalty program showed a similar proportion for card levels, thus the sample was well represented. Based on the RFM analysis, 4% were RFM tier 5 and more than 45% were RFM tier 1 (tier 5 being the highest and tier 1 being the lowest).

Table 1
Sample Profile

Variables	N	%
Age		
21-29 years	44	9.8
30-39 years	93	20.7
40-49 years	122	27.1
50-59 years	100	22.2
60-69 years	60	13.3
70 years and over	31	6.9
Gender		
Male	286	63.6
Female	164	36.4
State		
Arizona	32	7.1
California	418	92.9
Card tiers		
Level 1	3	0.7
Level 2	109	24.2
Level 3	338	75.1
RFM tiers		
Tier 1	209	46.4
Tier 2	150	33.3
Tier 3	51	11.3
Tier 4	22	4.9
Tier 5	18	4.0
Total	**450**	**100.0**

Ordinary Least Squares (OLS) Regression Analysis

OLS was performed three times with R, F, M as the three dependent variables, and the card tiers, special event, complimentary offers, sex, and age as the explanatory variables. Card tiers and age were variables with categorical data, thus converted into factors in the OLS model. Constant variance was checked and met through Bartlett test. However, the residuals from each of the three OLS model failed the test of normality (Fox & Weisenberg, 2010). Hence the significance of the coefficients of each OLS model was re-tested using bootstrap regression analysis. All three models turned out to be significant. Confidence intervals were reported at the 95% confidence level. There was a significant effect between special events, complimentary offers, age and recency, frequency, and monetary size. However, there was clearly no significant effect between card tiers and any of the three response variables (R, F, or M). Overall, there was a significant effect between recency and special events, and complimentary offers. For instance, recency increases 2.73 for every unit increase in special events. Though, recency scores were reversed, thus an increase in recency in fact indicates that the length between visits are longer. Therefore, each special event increases the length between visits by 2.73 day. On the other hand, recency decreases as age increases. The length between each visit shortens, as the members are older.

There was a significant effect between frequency and complimentary offers, and age. Members make more visits to the casino as they receive more complimentary offers, and the older they are. Yet, special events negatively affect frequency. There was a significant effect between monetary value and special events, complimentary offers, and age. Members spend more money as they receive more special events and complimentary offers, and the older they are in general (except for 60-69 years old).

Table 2
Summary of ordinary lease squares regression analysis (N=450)

	Estimate	Lower 95%	Upper 95%
R (Recency)			
(Intercept)	85.04	72.92	91.20
factor(CARD)2	4.22	-1.50	14.83
factor(CARD)3	4.34	-1.02	15.33
complimentary offers*	0.00	0.00	0.00
special events*	2.73	0.63	4.81
sex	0.34	-1.25	1.92
factor(age)30-39 years	-0.08	-1.01	0.95
factor(age)40-49 years*	-9.94	-12.40	-7.51
factor(age)50-59 years*	-23.27	-25.12	-21.37
factor(age)60-69 years*	-43.50	-45.54	-41.60
factor(age)Over 70 years*	-57.70	-61.42	-53.00
F (Frequency)			
(Intercept)	6.53	3.82	12.06
factor(CARD)2	-2.61	-8.07	0.08
factor(CARD)3	-2.53	-8.00	0.10
complimentary offers*	0.00	0.00	0.00
special events*	-0.28	-0.53	-0.01
sex	-0.02	-0.21	0.17
factor(age)30-39 years	0.03	-0.10	0.19
factor(age)40-49 years*	0.64	0.44	0.85
factor(age)50-59 years*	1.54	1.35	1.76
factor(age)60-69 years*	3.92	3.59	4.24
factor(age)Over 70 years*	7.49	6.57	8.38
M (Monetary Value)			
(Intercept)	-37837.03	-127421.96	10624.84
factor(CARD)2	30280.78	-9498.38	116608.84
factor(CARD)3	35592.98	-2588.42	120279.30
complimentary offers*	11.88	8.01	16.20
special events*	32608.37	9818.44	60930.51
sex	8674.88	-5712.83	23295.93
factor(age)30-39 years	-2325.44	-13359.99	6512.27
factor(age)40-49 years	10280.08	-4664.05	25085.19
factor(age)50-59 years	17672.14	-2086.49	33022.79
factor(age)60-69 years	8592.74	-11252.66	26979.66
factor(age)Over 70 years*	90977.48	31558.03	175621.93

Note. *Confidence intervals were reported at the 95% confidence level.

Principal Components Analysis (PCA) of RFM Values

Principal component analysis (PCA) of RFM data was first performed and then the first two PC-scores were plotted by card tiers. PCA was performed to examine if card tiers and RFM tiers separate the three response variables (R, F, M). The PC-loadings (see Table 3) show that the first PC is essentially the sum of the variables R and F, and the second PC is the variable M; moreover, the first two components cumulatively explain 97% of total variability in with R, F, and M data. Figure 1 shows box plots of recency, frequency, and monetary size as well as a scatter plot of PC2 vs. PC1 by card tier. These four plots clearly show that card tier has little effect on these three response variables. Figure 2 shows the same plots by RFM tiers; these plots show a clear separation of the three response variables by RFM tiers.

Table 3
Principal Components Loadings and % Explained

	PC1	PC2	PC3
Recency	0.646	0.308	0.698
Frequency	-0.656	-0.244	0.714
Monetary value	-0.39	0.92	0
% Explained	70.68%	97.35%	100.00%

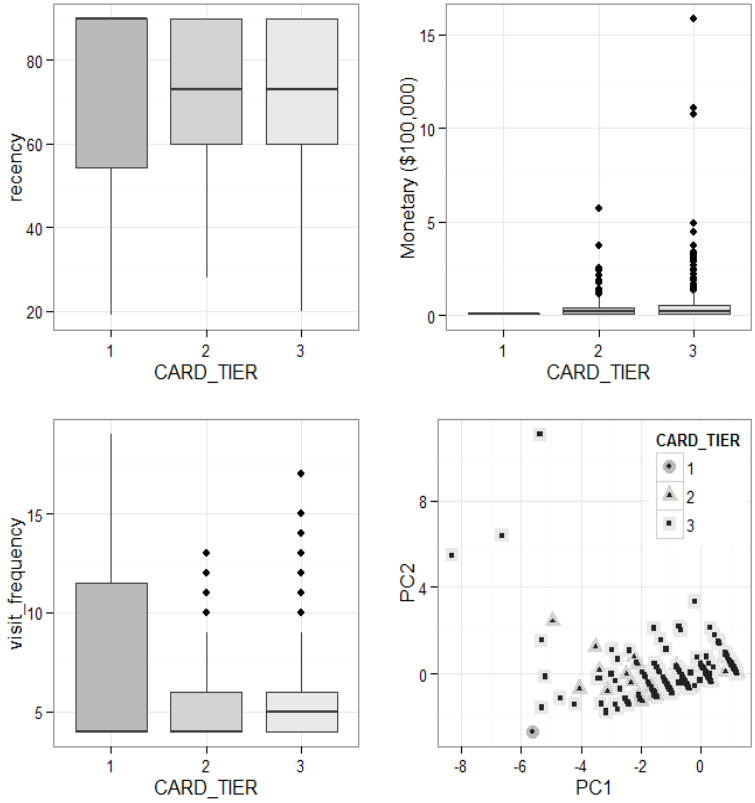

Figure 1: Box plots of recency, frequency and monetary size by card tier, and scatter plot of the first two PC scores by card tier.

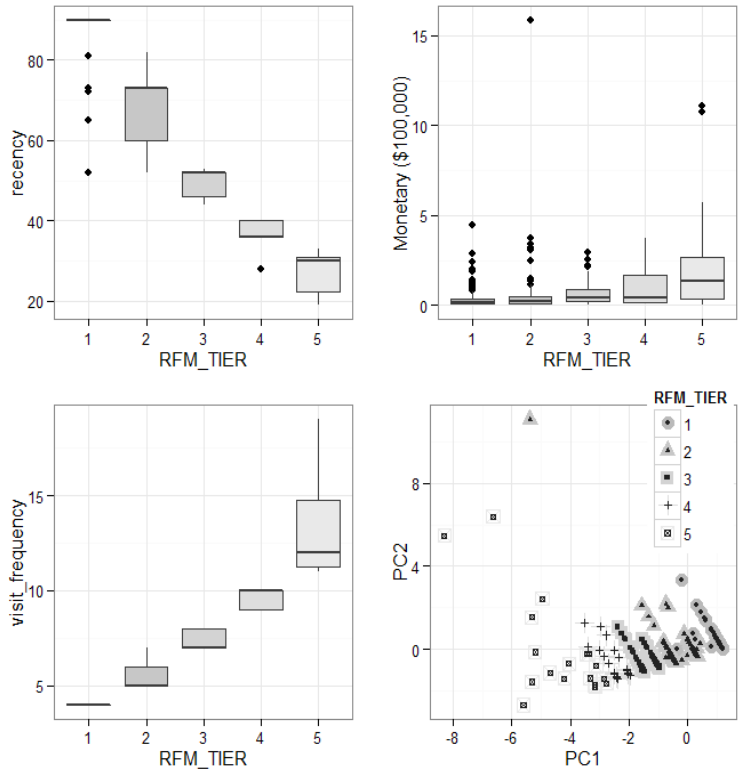

Figure 2: Box plots of recency, frequency and monetary size by RFM tier, and scatter plot of the first two PC scores by RFM tier.

Conclusion

Discussion of Results and Management Implications

As the competition between casinos continues to grow, it is essential for management to better understand its impact and effectiveness of loyalty programs in creating and building customer loyalty. This study specifically investigated the effectiveness of a Las Vegas casino loyalty program on members' behavioral usage level from different tiering strategies. Additionally, it attempted to exploit RFM analysis, a popular modeling tool adopted in loyalty marketing, to increase the practical usage of study findings.

Study results did not support the research hypothesis that card tiers have a significant effect on behavioral loyalty, indicating that purchase behavior factors are not significantly related to card tiers. The current loyalty program is composed of three card tiers (level 1 being highest, level 3 being lowest), but they do not necessarily indicate direct proportionality to value for table game players because members are upgraded to the next level solely from points earned while playing slot machines. For example, no matter how much a patron plays table games, he/she does not earn any points so slot players receive more benefits. Therefore, a card level 3 table player may be more valuable than a card level 1 slot player, but that value is not reflected in the reward structure of the loyalty program. The outliers from figure 1 monetary box plot signify those table players who may be more valuable.

Loyalty programs have been developed to encourage purchase behavior and they are classified into segments to represent status. Loyalty program members strive for that status because they believe value enhances with status upgrades. If that value is not well reflected in the reward structure of a loyalty program, it clearly breaks the essential objectives of designing a loyalty program and could possibly frustrate customers with contradictory expectations. In the long run, customers are likely to leave the brand when they feel they do not benefit from the value they create. Nevertheless, changes and modifications can be made.

The findings of this study offer casino management some practical advice. The current loyalty program are not rewarding the patrons equally since patrons earn points and move up to the next card level just by playing slot machines. Purchase behavior factors are not significantly related to the card tiers and table game players are actually being penalized because of how this program is designed. Casino management should consider upgrading the program by more effectively reflecting the significant factors that impact purchase behaviors into their tiering strategies, such as the RFM tiers, and find other ways to count points for table game players.

Casino loyalty programs can become successful when they are utilized wisely and rewarded intelligently (i.e., in line with customer expectations of reward). Since purchase behavior is more difficult to measure in the gaming industry, loyalty programs should be exclusively designed in a way that coalesces with customer behavior by including a mixture of mechanisms instead of simply following the industry norm. Slot machines and table games can be rated into different levels depending on the game type, denomination (betting amount), and hold percentage (the portion of gambling money that the casino retains) and have different point structures. A distinctive points system for table and slot players will allow patrons not to perceive any kind of dissatisfaction or unfair treatment.

Casino marketers should engage in deeper segmentation by integrating more variables related to purchase behavior such as purchase recency, purchase frequency, and purchase length for directing marketing activities. While RFM tiers showed to have a relationship with each dependent variable according to principal component analysis, RFM analysis may also include defects. The outliers shown in the monetary box plot of figure 2 may be resulted in exploiting RFM analysis, thus careful observation is indispensable.

Moreover, incentives and benefits should be provided more carefully as they were found to have different impacts on customer purchase behavior. While both special events and complimentary offers affected recency, frequency, and monetary size, the effect was not always constructive. Special events do have a positive affect on monetary value but should be offered more carefully because it does not necessarily generate more trips or shortens the length between each visit. Casino marketers should attract members through complimentary offers more regularly and use special events as a more unique and exceptional offer every now and then. The patron's age should also be considered as a variable for deeper segmentation. Casino marketers should constantly scrutinize how different types of offers change members' behavior and make use of them for distinctive purposes and times. Overall, casino marketers must realize that gaming industry loyalty programs should be customized and clearly differentiated from other businesses in the service industry.

The gaming industry, not to mention Las Vegas, is particularly aggressive in attracting customers with a range of marketing products such as complimentary room offers and promotional offers. Customers are more offer-driven than in any other service industry and faced with plenty of choices in a highly competitive market. Often, customers will be engaged in more than one rewards program and will try to take the maximum possible advantage by comparing the incentives available to them. Therefore, marketers should re-evaluate their assessment and segmentation criteria consistently and to optimize the effectiveness of casino loyalty programs.

Study Limitations and Recommendations for Future Studies

As with all research, this study has its limitations. Firstly, findings from this study cannot be generalized since the data was obtained from a single high-end property and data was only from 2011 when the recession might have been still in effect. Secondly, an exclusive inclusion criterion was applied to select the study sample, and given the fact that there are different levels of loyal customers due to situational factors and individual circumstances, a wide range of loyal customers was not included. Lastly, although RFM analysis has been recognized as an effective segmentation process for marketing towards loyal customers in various business industries, some scholars criticize RFM models. It has been criticized on the basis that it is not causal and does not accurately predict a member's potential behavior, and thus is only useful for short-term predictions (Acatrinei & Puiu, 2012; Reinartz & Kumar, 2002). Besides, the RFM model included 5 tiers, whereas the current casino loyalty program only had 3 card levels. This study compared two models that were considerably different, which should be taken into account.

As this is one of the few reported studies that have attempted to inspect the effectiveness of casino loyalty programs from a tiering strategy perspective, replication of this study would be essential to the research stream. Repeating this study with different random samples drawn from diverse segments of casinos and considering patrons who move tier levels would assist in establishing the external generalizability or applicability of the study results. Customer loyalty should be understood from a multi-dimensional point of view. Even though the objective of this study was to specifically investigate behavioral loyalty, future studies would benefit by expanding the scope to include information pertaining to attitudinal loyalty. Extending the findings from this study to larger, more realistic reference populations, and more current data would provide valuable insights into the dynamics behind loyalty program effectiveness.

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