

eCommerce Market Convergence in Action: Social Casinos and Real Money Gambling

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Abstract

Online social casinos and real-money gambling industries, including gambling at online and live venues (such as casino resorts), are quickly converging (H2 Gambling Capital & Odobo, 2013). Using data collected from 339 online real money gamblers, the relationship between player demographics and gambling preferences and frequency of online social casino participation is examined. Frequency of play in social casino games varied depending on gender and education, similar to patterns in real money gambling. Players who participated more frequently in social casino games were also more likely to spend more time participating in real money online gambling. Findings provide consumer insight for online gambling and social casino companies working toward convergence of the two game types, including implications for target markets for crossover play, loyalty programs, and corporate social responsibility.

Keywords: online gambling, social casino, wireless and mobile technologies, iGambling commerce, gambling behavior

Introduction

As online social casino gambling games have become more popular, gambling businesses have aimed to marry these games with real money gambling in both online and live venue settings (Woods, Mills, & Shanahan, 2014). The two forms of gambling appear similar in content but differ along one key point: the wagering of real currency. In standard online gambling, conducted via websites, apps, and social networking, real money is wagered for monetary prizes. In social, freemium, and free-to-play (*social casino*) gambling games, no money is paid out for wagers and thus no real-world financial benefit is gained from winning social casino games. Many social casino sites adopt the freemium model, in which microtransactions are completed to unlock additional play features. In the social casino setting, for example, a player can purchase chips with which to gamble on more games, but these chips have no real world value and cannot be redeemed for cash. Players also may complete a microtransaction to purchase access to a new level or game that is otherwise locked. Social casino sites also differ from gambling games in their back-end design. Social casino game algorithms are not always based on the true probabilities of a game, but are built for player enjoyment and engagement, with achievement options and social interactions (Gainsbury & Derevensky, 2013; Gainsbury, Hing, Delfabbro, & King, 2014). Social casino game achievement options might include moving up a ladder of levels, at which certain new games and prizes of virtual chips are granted, or winning trophies or flair for high

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scores. Social interactions in such games are encouraged by allowing players to share their achievements and invite other users to participate through social media platforms such as Facebook or Twitter, and share or gift virtual chips between users.

The efforts at convergence have gone in both directions – gambling game designers have attempted to incorporate game mechanics from non-gambling social games – for example, Candy Crush and Words with Friends – into the casino wagering environment, while social casinos have attempted to bring real-money gamblers into the play money and social sphere (GambleID, 2014; Woods et al., 2014). Primarily, however, their concerns hinge on player monetization; attempting to understand what drives players to cross over from free to real money gambling content, and the perceived customer value once they are within real money content play. This study investigates the social casino behaviors within real money online content play, providing a profile of known cross-value customers – those who participate in both real money and social casino games. Real money online gamblers are here analyzed independently from live venue gamblers, as the two populations have been found to be largely distinct from one another (Gainsbury, Wood, Russell, Hing, & Blaszczynski, 2012). Because online gambling is more similar to social games than live venue gambling, in terms of content, gambling behaviors, and mode of access (Gainsbury, Russell, & Hing, 2014), the former population is selected for this inquiry.

Purpose of the Study

This research examines differences in demographics and gambling behaviors for different frequencies of social casino participation among real money online gamblers. The study's objective is to analyze customers who already engage in cross-value play between real money and social casino games. The study's findings provide consumer insight for online gambling and social casino companies working toward convergence of the two game types.

The following research questions are thus pursued: What is the profile of real money gamblers who also participate in social casino games? What is the relationship between real online gambling and social casino gaming among a population of real money online gamblers? More specifically, what time and money expenditure (for real money gambling) differences exist for different social casino participation frequencies?

Literature Review

This literature review covers the two compared play types, real money gambling and social casino gambling. First, the markets for each are compared, followed by player profiles for each type of game option. Finally, we present a discussion of the similarities between real money and social play and the crossover opportunities between the two.

Social Games and Real Money Gambling Markets

Real money online casino gambling revenue estimates for 2015 (€28.24 billion) still far outstrip social casino game estimated revenues (€2.12 billion), though in the United States, revenue from social casino games jumped 97% between 2012 and 2013 (H2 Gambling Capital & Odobo, 2013; Reyburn, 2014g). The social casino and real money gambling industries are quickly converging and reports suggest social game customers convert into higher spending real-money gamblers (H2 Gambling Capital & Odobo, 2013). The convergence is not limited to social casino and online gambling; several live venue casino resorts have entered the market. The top social casino game is Slotomania (Reyburn, 2014a), created under parent company Caesars Entertainment, who operate seven Las Vegas Strip casino resorts. Slotomania, DoubleDown Casino (owned by IGT, a major slot machine manufacturer), and MyVEGAS slots (owned by MGM Resorts,

operator of 10 Las Vegas Strip casino resorts), comprise 39% of the social casino Apple app market (Reyburn, 2014a). Current estimates suggest around 173 million people, globally, play social casino games (Morgan Stanley, 2012). On internet-enabled mobile devices, casino games account for 7% of total revenue for all iOS apps and 10% for all Android apps (Reyburn, 2014g). The US significantly leads all other countries regarding total market size for social casino games, though Japan, Korea, Russia, and Canada saw the largest growth in market size in the past year (Reyburn, 2014a). A majority of total social casino gaming revenue, from among the top 10 grossing countries, was generated from the iOS platform (Reyburn, 2014a). It should also be noted that outside of a few examples in the UK and Australia, social casino games cannot be cashed out, meaning that games are generating these revenues strictly on a one-way transaction from players buying virtual currency.

Profile of Real Money Online Gamblers

The demographic makeup of real money online gamblers is fairly constant across cultures and jurisdictions. Real money online gamblers tend to be younger, male, wealthier, and better educated than those who have not gambled online (Bernhard, Lucas, & Champaner, 2007; Jonsson, 2012; Wood & Williams, 2009, 2012). Additional research has also indicated that online gamblers are less likely to be married and more likely to be students than non-Internet gamblers (Wood & Williams, 2012). There was a clear gender split in gambling behaviors and preferences; males overwhelmingly prefer sports betting, horse/dog race betting, and games of skill (like poker), while females prefer predominantly games of chance, such as slots and online bingo (Parke, Parke, Rigbye, Suhonen, & Williams, 2012; Wood & Williams, 2012).

Profiles also differ across type-of-game preferences (e.g., slot games versus table games). Real money online casino gamblers (e.g., games including slots and video poker) are predominantly female, between the ages of 46-55, play two to three times per week, and spend between one to two hours per gambling session (Parke et al., 2012). Real money poker players, meanwhile, are predominantly male and between the ages of 26-35, though their frequency and time spent was the same as casino gamblers (Parke et al., 2012).

Profile of Social Casino Players

Industry studies show that one third of social casino players are women and a majority of all players are between the ages of 35-54 (IGT, 2013; Miller & Howell, 2014). Women also spend more time playing social casino games than males do, tend to purchase 30% more virtual chips from these social casino games, and comprise 70% of the highest spenders (IGT, 2013; Morgan Stanley, 2012). An Australian study found that 69% of people consider their primary activity on social networking sites to be playing social games (not necessarily all social *casino* games), and 66% play social games on a daily basis (Wenkart, 2012).

Card games are the most popular social casino game category overall, contributing \$150 million to overall social casino games revenue (App Annie, 2014), though the single most popular game on the Android platform was a slots-type game, which generates 20% of all Android social casino gaming revenue (Reyburn, 2014a). As with real money gambling, however, profiles in game type differ. Social poker games are male-dominated, while slot-type games and non-gambling social games (e.g., Bejeweled Blitz and Farmville) are predominantly played by females (Morgan Stanley, 2012).

Social Casino Games and Gambling Crossover

Social casino gaming is still a nascent field of study, so there is not yet an empirical explanation of how it relates to long-term, real-money gambling behavior (for either live venue or online). Across several jurisdictions, it was reported that populations are able to tell the difference between social casino games and real money online gambling (Miller & Howell, 2014). A recent survey of 1,103 US social casino game players showed that nearly 70% were also interested in real-money gambling and would participate in legal online gambling (SuperData Research, 2013). More recent research used a survey of nearly 2000 past-year gamblers and found that more than 10% had also participated in social casino gaming (Gainsbury, Russell, et al., 2014). Social casino gamers who also gambled within the last year were more likely to be male and aged 45 and under. Moreover, social casino gamers were significantly more likely to also participate in all forms of gambling (e.g., instant scratch tickets, lottery, sports betting, etc.), compared to real money online gamblers, who participated in a smaller variety of game type (Gainsbury, Russell, et al., 2014). This would suggest that social casino gamers are more broadly interested in gambling and do not substitute real-money gambling with social casino games. This would correspond with findings that the most popular time to play social casino games is between 4:00 and 6:00 pm, suggesting that social casino games may be temporary distractions during commutes and may complement real-money gambling participation at other times of day (IGT, 2013). However, more robust studies are required to better understand the directionality of this relationship, as it is unclear whether increased social casino gaming leads to increase real-money gambling (or vice versa).

Methods

The methodological approach used a survey design, distributed and administrated online to an international audience using Qualtrics, an online survey creation and distribution tool. The survey was made available to respondents between October 20, 2012, and November 25, 2012. The study sample included adults over the age of 18 who had placed at least one real-money wager online during the three years prior to the survey.

Participant Recruitment

The survey was distributed through Casino City via banner advertisements on their family of websites and an email blast to their membership list. Casino City is a prominent gambling web portal, including a directory of online and land-based gambling venues, a repository for gambling news, a business centre, and gambling glossaries. The multiple distribution channels were sought to accommodate typically small response rates for online surveys (Zikmund, 2003). Participants who qualified for and fully completed the survey were offered the opportunity to enter a raffle for one of 40 prizes of \$50 each (paid in the currency of the winner's choice).

Survey Instrument

The data collected for this study was part of a broader study into online gambling preferences and behavior. Data for this study came from survey questions on gambling behavior, including gambling frequency, time (in hours) spent in gambling sessions, and dollar amount spent in gambling sessions. Gambling frequency refers to how often the respondent reported gambling online, on average, during the prior 12 months. Answer options ranged from *Daily* to *Once per Month or Less Often*; as can be seen

in Table 1. Time and dollar amount spent in gambling sessions refers to the estimated amount of time (in hours) and money (in US dollars) that the respondent spent, on average, during a gambling session. Respondents were also asked how frequently they participated in free online gambling activities (i.e., play money or social games, where no real money is wagered). Basic demographic information was also collected, including gender, age, income, education, and marital status.

Procedure

The collected data was compared across the two groups: those who never participate in play money games and those who do participate in play money games. Analysis of variance (ANOVA) was performed to compare social casino frequency across demographic groups. A multivariate analysis of variance (MANOVA) was performed using dollar amount spent per online gambling session and time spent per online gambling session as dependent variables and participation in play money games as the independent variable. To ascertain whether a difference was present in frequency of play (categorical variable) between those who never participate and those who do participate in play money games, a Pearson chi-square test was conducted.

The data were analyzed using SPSS version 22. The data set was analyzed for outliers on the measured variables of dollar amount spent in real money gambling sessions, time spent in gambling sessions, and real money gambling frequency. Skewness and kurtosis, univariate outliers (*Z*-scores), and multivariate outliers (Mahalanobis distance) were examined. Fifteen univariate and 13 multivariate outliers were found and removed from analysis, resulting in an *N* of 342. Due to large skewness and kurtosis even after outliers had been removed, the dollar amount spent and time spent variables were transformed using square root values.

Assumptions for MANOVA were also tested, including linearity, normality, homogeneity of variance and covariance matrices (Box's *M*), homogeneity of variance for the univariate situation (Levene's Test), and singularity and multicollinearity. All assumptions were met.

Results

Table 1 displays basic demographic information for gender, age, income, education, and marital status, as well as social casino play frequency and real money gambling frequency. Approximately three quarters of respondents were male (74.5%), with a mean income between \$60,000 and \$69,999, consistent with prior literature, and mean age between 50-59 years, older than prior findings (Wood & Williams, 2012). The majority of respondents had at least some college or university education (84.3%) and were married (65.2%), again consistent with prior literature (Parke et al., 2012; Wood & Williams, 2012).

Table 1
Demographic characteristics and gambling behaviors of study sample

		Frequency	% of Total
Gender	Male	251	74.5%
	Female	86	25.5%
	<i>Total</i>	337	100.0%
Age	20 – 39 Years	24	7.1%
	40 – 49 Years	59	17.4%
	50 – 59 Years	95	28.0%
	60 – 69 Years	118	34.8%
	70 Years and Older	43	12.7%
	<i>Total</i>	339	100.0%
Income	Less than \$20,000	26	9.0%
	\$20,001 - \$29,999	18	6.3%
	\$30,001 - \$39,999	25	8.7%
	\$40,001 - \$49,999	28	9.7%
	\$50,001 - \$59,999	22	7.6%
	\$60,001 - \$69,999	25	8.7%
	\$70,001 - \$79,999	20	6.9%
	\$80,001 - \$89,999	27	9.4%
	\$90,001 - \$99,999	15	5.2%
	\$100,000 - \$124,999	30	10.4%
	\$125,000 or more	52	18.1%
	<i>Total</i>	288	100.0%
Education	Less than High School	10	3.0%
	High School/GED Equivalent	43	12.7%
	Some College or University	88	26.0%
	2-year College/University Degree	49	14.5%
	4-year College/University Degree	82	24.3%
	Graduate Degree (e.g., Master's, Doctorate, Medical, and/or Law)	66	19.5%
	<i>Total</i>	338	100.0%
	Marital Status	Single	50
Married		223	65.2%
Unmarried, living with significant other		21	6.1%
Widowed		10	0.9%
Separated		3	9.1%
Divorced		31	2.9%
Other		4	1.2%
<i>Total</i>		342	100.0%
Social Casino Frequency	Once per month or less often	161	47.1%
	2-4 times per month	60	17.5%
	2-6 times per week	57	16.7%
	Daily	64	18.7%
	<i>Total</i>	342	100%
Gambling Frequency	Once per month or less often	116	36.8%
	2-4 times per month	72	22.9%
	More than once per week	127	40.3%
	<i>Total</i>	315	100.0%

Demographic Differences

Social casino play frequency was compared across the major demographic categories, including gender, age, income, education, and marital status. Social casino play frequency was compared across genders using an independent samples *t*-test, and across the remaining demographic categories using ANOVA.

For gender, there was a significant difference in play frequency category, $t(335) = 2.51, p = .013$, with males playing social casino games less frequently than females. The

ANOVA group comparison for education was significant, $F(5,332) = 2.766, p = .018$. A Tukey HSD follow-up procedure revealed that the Graduate Degree group participated in social casino games with a significantly lower frequency than did those who had Less than High School education. The statistical tests for age, income, and marital status were not significant with regards to social casino play frequency, all $ps > .05$.

Average Dollar Amount and Time Spent in Real Money Gambling Differences

The dataset was subjected to a one-way MANOVA to analyze dollar amount and time spent differences among social casino frequencies. There was a statistically significant difference between the four reported social casino frequencies (*once per month or less often, 2-4 times per month, 2-6 times per week, and daily*) in the composite score of dollar amount spent and time spent (in hours) per real money gambling session, $F(6, 674) = 3.31, p = .003$, using Wilks' Lambda criterion. h^2 of .029 suggested a small association between social casino frequency and average dollar amount and time spent in real money gambling.

For each of the two spend measures, follow-up univariate ANOVA results were examined to determine which motivational dimensions separately made a difference in the frequency of gambling. To protect against Type I error, a Bonferroni correction was applied ($\alpha = 0.025$). Average amount of time spent per real money gambling session was significantly different for the different levels of social casino frequency with medium effect size ($F(3,338) = 3.39, p = .003$, partial $\eta^2 = .04$). Average dollar amount spent per real money gambling session, however, was not significantly different for the different levels of social casino frequency, $p = .075$.

A summary table of means and standard deviations for average dollar amount and time spent, split by social casino frequency, can be found in Table 2.

Table 2
Means and Standard Deviations for Average Dollar Amount and Time Spent per Real Money Gambling Session, by Social Casino Frequency

Social Casino Frequency	Mean (Standard Deviation) per Real Money Gambling Session	
	Dollar Amount Spent ^a	Time (in hours) Spent ^b
Once per month or less often	42.92 (17.07)	1.71 (0.25)
2-4 times per month	33.88 (10.75)	1.78 (0.28)
2-6 times per week	60.37 (18.61)	2.19 (0.21)
Daily	43.04 (18.41)	2.40 (0.23)

^a Univariate ANOVA: n.s., $p = .075$

^b Univariate ANOVA: $F(3,338) = 3.39, p = .003$, partial $\eta^2 = .04$

Follow-up Tukey tests on the significant univariate ANOVA results also used a Bonferroni correction to maintain the familywise error rate. Follow-up tests indicated that daily social casino players had higher mean average time per real money gambling session than did those who participated in social casino games only once per month or less frequently.

Real Money Gambling Frequency Differences

There was a significant relationship between real money gambling frequency and social casino play participation, $\chi^2(2, N = 315) = 9.94, p = 0.007$. Real money gambling frequency was compared to a binary social casino participation variable rather than a multi-category frequency variable to ensure minimum cell count was met for chi-square analysis. There is a higher concentration of frequent real money gambling among

respondents who report never playing in social casino games, compared to a more even distribution of those who do participate in social casino games. Table 3 below displays the cross tabulations and chi-square analysis results.

Table 3

Frequency Distribution and Relative Frequencies of Social Casino Participation in Relation to Real Money Gambling Frequency

Participate in Social Casino Games	Real Money Gambling Frequency			Total
	Once per month or less often	2-4 times per month	More than once per week	
No	20 (32.3%)	7 (11.3%)	35 (56.5%)	62 (100%)
Yes	96 (37.9%)	65 (25.7%)	92 (36.4%)	253 (100%)
Total	116 (36.8%)	72 (22.9%)	127 (40.3%)	315 (100%)

Pearson Chi-Square $\chi^2(2, N = 315) = 9.94, p = 0.007$

Discussion

Analysis showed several distinct demographic and gambling behavior differences for different social casino play frequencies. The findings reveal some characteristics of real money gamblers that differ based on social casino play frequency, which may present a useful tool for operators looking to pinpoint a profile of social casino players with the potential to convert over to real money gambling.

Findings from this study indicated that female real money gamblers participated in social casino games with significantly higher frequency than males, indicating a higher propensity for women to move between value media compared to their male counterparts. Prior research indicates females tend to prefer casino-type games more than males (Lesieur, 1988; Potenza, Maciejewski, & Mazure, 2006), suggesting that perhaps females and casino game (e.g., slots or bingo) players might be a valuable target market for crossover promotion. Social slot-type casino games are already the most popular form of social gambling via app, offering a large audience, though poker is the most popular form of social gambling on the Facebook platform (Miller & Howell, 2014; Reyburn, 2014a). Targeting marketing efforts to specific game preferences, genders, and game platforms should result in more effective promotion strategies.

With regard to education, those real money gamblers who held graduate degrees (including master's, doctorate, medical and/or law) participated in social casino games with lower frequency than those who had completed less than a High School degree. One of the benefits of social casino games is that a major mode of access is through Facebook, through which a company can access education level information that will assist in tailoring crossover promotions. That there was no significant difference found in social casino play for age, income, and marital status during this inquiry does not mean that differences do not exist for other cross-value players. Further research may reveal additional differences for individual game variants, for example, or for gamblers who participate in social casino and live venue gambling, but not online gambling – perhaps due to laws in their jurisdiction that ban the practice of the latter.

Analysis of differences in average dollar amount and time spent per real money gambling session between social casino play frequencies revealed that there was no significant difference in dollar amount expenditure, but there was a significant difference in time spent with real money gambling, those who play social casino games more frequently also spend more time in their online gambling. Interestingly, frequent, non-daily social casino players (2-6 times per week) significantly spent more money on real money gambling than their peers, suggesting this group may be a latent class in the behavior-based customer segmentation. While we do not have specific knowledge

as to the motivation for this, it could be due to increased familiarity with the games. Conversely, the results do not suggest directionality. It could be the case that real money gamblers want to continue their experience without spending as much money, thus they make the transition to social games.

In any of these cases, it is important that during convergence, underlying game algorithms must match between social and real money games. The algorithms do not always match, so players who jump between the two value-media are not drawn in by social casino game algorithms that inflate winning percentages greater than those offered in real money casino games (Gainsbury, Hing, et al., 2014). There is concern here from both customer retention and responsible gambling angles. Customers who found themselves regularly winning in social games may be deterred from continuing to use the gambling service if they switch over to real money gambling and start losing with greater frequency due to the probabilities innate in the game.

From a responsible gambling standpoint, inflating odds in social casino games may contribute to mistaken beliefs about realistic win percentages in those games.

Results also showed a significant relationship between real money gambling frequency and social casino play participation, with higher frequency real money gamblers most likely to report not playing social casino games. Real money gamblers who are more casual about their gambling will likely bounce between real money and social casino play. More committed, serious, and possibly problem online real money gamblers are much less interested in the play money games. There is also problem gambler concern regarding the potential for unrealistic expectations; players may play a social casino game with more favorable odds than a real money casino game, and expect a similar winning outcome when they migrating from social play to real money play. While some research speculates that problematic behavior and addiction does not exist in social casino games (Miller & Howell, 2014), psychological theories suggest that the similarities in game content between social casino games and real money gambling may generate the same problem gambling concerns (Gainsbury, Hing, et al., 2014). Any targeted promotions should certainly be aware of such concerns.

Social casinos can be used as an acquisition tool for both online and live venue gambling. They can serve as a segue strategy by operators prior to government regulation of online gambling and the later launch of real-money sites, and can reinforce current land-based marketing and branding strategies. Caesars Interactive Entertainment (a part of Caesars Entertainment Corporation), for example, uses their World Series of Poker brand on social poker games, real-money online poker, and live venue poker. The three channels interface – players are able to win entry to real-money live venue poker events by playing the social casino and real-money online games (WSOP, 2015). Implications of social casino and real money crossover also exist for loyalty programs, where crossover rewards between social casino and real money gambling can be made. While Caesars Interactive has not yet integrated their Total Rewards program, such loyalty programs do already exist – MLife, for example, the loyalty program of the MGM Mirage resort casinos, grants points for social games play at the MyVEGAS social casino (myVEGAS, 2015a). These points can be redeemed for live shows, food and beverage credit, hotel rooms, and retail rewards, much the same as real money gambling play (myVEGAS, 2015c). Optimizing crossover rewards for customers who participate in both social casino and real money gambling may be particularly valuable for a company aiming to capitalize on the convergence of not only social casino and online gambling, but also live venue gambling and non-gambling amenities. For example, improving marketing efforts and rewards for the frequent, non-daily social casino players (2-6 times per week) may significantly increase real money gaming revenues. United States state laws currently in existence that cover online gambling require the online sites be paired with a live gambling venue, offering the additional benefit of shared customer information from loyalty programs. Results from this study show that there are groups of customers who participate in cross-value play and would thus be ideal test subjects for these reward

options.

Limitations and Future Research

The study included some methodological limitations. Logistic regression could be used to eliminate the possibility here of potential spurious results that may be due to type 1 error from independent tests. For this analysis, logistic regression failed to offer different results but appropriate model fit could not be obtained. Thus, independent tests were conducted; new data sets should consider other analytical methods. It is also crucial to recognize an innate limitation of any type of analysis like those used in this paper – causality versus correlation. This study does not specifically ascertain with the current data presented whether online social play influences people to migrate to real money play, or whether real money play influences some people to play for free (e.g., when they want to save money but still play, or practice their skills in a low-risk arena). It may very well be that for some people, social casino play leads to real money play, whereas for others real-money drives them to social. This research inquiry was framed to investigate the social casino behaviors of real money gamblers, as the data set is limited to only real-money gamblers. For the alternate frame of reference, future research should investigate a dataset of social casino players and look at their real money gambling behavior.

From an implications standpoint, the findings in this study cover only cross-value play between social casino and real money online gambling, and do not include cross-value play for live venue gamblers. Crossover promotions and loyalty program benefits may not translate for these two modes of access for real money gambling. This study also uses self-reported gambling and social casino play behavior, which is particularly susceptible to recall bias as well as non-respondent bias (Shaffer, Peller, LaPlante, Nelson, & LaBrie, 2010). Future research should also include actual player behavior data, if available, to analyze cross-value play for both online and live venue gamblers. In addition, studies like this one are just a starting point, providing information on players who already gamble online for real money. Future research should also investigate the motivations of cross-value play. For example, does playing in social casino games influence players to try real money play, whether it be online or in a live venue, or both? Certain games, too, may be more popular for cross-value play. Prior research into cross-gaming play (i.e., play in different types of games) has used analytical methods that may also be useful for this inquiry (Suh & Alhaery, 2014). Moreover, future studies should consider applying logistic regression or decision tree analysis to predict a social casino player's real money gaming based on a certain variables (e.g. demographics, frequency of social casino gaming, and duration of social casino gaming). This methodology could also potentially be used to predict the amount of money and/or time a social casino player would spend on real money gaming, which could have significant and practical implications for on- and off-line casino management as well as problem gambling treatment. Finally, future research should consider the relationship between mobile app users' gaming behavior and social casino/real money gaming.

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