CASINO-OLOGY

The Art of Managing Casino Games

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Blackjack Performance Part I

Increase Profits at Blackjack: The Importance of Time and Motion Issues

What one single element in the game of blackjack is most important to the casino executive regarding revenue? Game-protection procedures? Front-line-employee demeanor? The employees' game skills and experience? The element of luck? All of these are important and have a great deal to do with blackjack's revenue flow; however, over the long run, no one element influences the profit, and profit potential, of any gambling device or game more than time and motion—in other words, the number of decisions the game of blackjack achieves over a given period of time. Your defenses can be weak, your dealers sullen, and your staff inexperienced, but nothing amplifies your game strengths and weaknesses as much as the increase or decrease in the amount of hands your casino achieves during its period of operation. As this chapter points out, the increase (or decrease) of one round of blackjack over an hour's time will make (or cost) your casino thousands of dollars annually. More important, the result produces a direct effect to your organization's bottom line.

Time and motion issues in blackjack are best described as the combination of game procedures, dealing mechanics, and theory application that maximizes (or minimizes) the number of results achieved per table during a specific period of time. By understanding and utilizing these performance issues, the casino's live-game manager can notably increase blackjack revenues without incurring additional operational costs.

For example, think of a hand of blackjack as a sales transaction. For each hand that is sold (i.e., dealt), the transaction will produce a theoretical amount of income for the casino. Since it's safe to assume that an average house advantage in casino blackjack can be calculated in the neighborhood of 1.5%, it can also be assumed that for each $10 wager, the house will theoretically win 15¢. This means that every time a dealer achieves a pace of 400 hands an hour (average wager of $10), he or she in theory earns $60 in revenue for the house. This figure might not look like much, but multiply it by 24 hours, then by the average number of tables open, then again by 365 days, and you'll see how much revenue these games will generate, even with a conservative average wager of $10.

The Advantage of Gaining Additional Rounds

The casino executive may have a difficult time getting the players to wager more and play worse, but he does have the ability to tweak the operation and squeeze out more outcomes. At this point the challenge to the knowledgeable gaming executive is, "How can I increase our hourly round production from 55 to 60?"

To better illustrate the effects realized from time and motion issues, the executive first needs to establish some type of operational benchmark that honestly depicts his existing blackjack game for measuring and comparing procedural and game-pace options. This can be accomplished by constructing a time-and-motion generator using a spreadsheet program like Excel. The elements that need to be considered are:

1. average number BJ tables open during a 24-hour period;
2. average number of players at an open BJ table;
3. average wager of all players;
4. estimated house advantage in BJ at the target casino.

The average number of tables open can be determined by breaking down shifts and days of the week. I've found it easier and just as accurate to poll my shift managers and come up with an estimate based on their input. The average number of players and average wagers can also be deduced through the same process if more detailed information is not already kept by accounting, or an in-house financial analysis. Establishing your blackjack house advantage will be more difficult. The normal range to consider is between 1% to 1.8%, depending on the education level of your players, game rules, and number of decks utilized.

Once these metrics have been established, the executive can construct a workable model. For this example, I'm using 12 BJ tables, 4.5 players, an $18 average wager, and a 1.5% house advantage as my metric inputs. This represents a medium-sized casino that is more likely representative of a Native American or Midwest riverboat casino.

Table 1

Estimated Win Per Each Round	
Average number of tables open	12.0
Average number of players	4.5
Average bet of each position	$18.00
Estimated house advantage	1.5%
Estimated win for each round	$14.58

Table 1 indicates how much one round of blackjack is worth to the casino in theoretical win. This number is important, because it establishes a benchmark for comparing the effect of time and motion and the importance of achieving additional rounds dealt in the game of blackjack. For example, using the estimated gain from one round dealt, what would be the theoretical increase in revenue for gaining one additional hourly round, per day, month, and year?

Table 2

Estimated Win Per Day, Month, and Year	
Estimated win per round	$14.58
Estimated win per round—Day	$350
Estimated win per round—Month	$10,673
Estimated win per round—Year	$128,071

Isn't that interesting? What started out as a meager $15 gain for one additional round turns out to increase the casino's annual win figure by $128,000! The revenue figures in Table 2 can generally be obtained without increasing operational expenses by one cent, meaning any increase in revenue goes directly toward the operation's bottom line profits.

Using the estimated annual figure, the executive can easily see the advantage from increasing the number of additional rounds dealt in the game of blackjack. A figure of $128,000 seems like a big number, but in most instances it's only a starting point for revenue-gain potential. In most cases casinos do not put much emphasis on achieving more gaming results as compared to other concerns, and have created several areas in their game procedures, utilization of gaming equipment, and protection policies that bog down their hand and round production. From my experience as a gaming consultant, I can safely predict that most gaming operations can be improved to produce between three and seven additional rounds per table per hour. Based on this assumption, the average mid-sized casino has the potential to increase blackjack revenue from existing business in the neighborhood of $400,000 to $900,000 annually. Just think what the *major* casino operations could produce!

Understanding the Difference Between Rounds Dealt and Total Hands Dealt

Casino operators look at either rounds or hands dealt as an indicator of production. Unfortunately, most executives have a difficult time converting from one measurement to the other, similar to the confusion caused when converting the metric system to inches and feet. Since both methods of measurement are related based on certain assumptions, a simple calculation can be applied.

The measurement "rounds" takes into consideration one complete game or round dealt to all players and the dealer. In the example given in this section, a round would consist of 5.5 hands: 4.5 player hands and one dealer hand. However, the most widely used numbers are not derived from this small a sample, but from one hour of play on a given table game. The industry uses 60 dealing rounds per hour as the standard number that should be dealt. If we then insert the multiple of 5.5 representing the number of hands dealt per round, the calculations indicate 60 rounds is equal to 330 hands dealt. Please don't confuse this figure with the estimated-hands-dealt figure calculated during game-pace audits. This metric will be examined later in subsequent chapters.

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Blackjack Performance Part II

Do Key Game Protection Procedures Cost More Than They're Worth?

"Blackjack Performance Part I" illustrated the importance of time and motion issues, and the importance of increasing rounds dealt in blackjack. The more hands dealt, the greater revenue the casino achieves and the more profit the casino can contribute toward the bottom line. This chapter suggests several areas where the casino can increase its profit potential based on adjusting its presently established game procedures. Where? Probably in places executives least expect them, hidden in what one would think are positive attributes to game protection. Once we examine three specific game protection procedures—multi-pass or complicated multiple-deck shuffles, prohibited mid-shoe table entry, and limited deck or shoe penetration—you as an executive may wish to rethink your game-protection strategy.

Multi-Pass Shuffles

Although many casinos have gone to either batch or continuous shuffling machines in their shoe games, a number of them still rely on their dealers to hand shuffle the cards. In most situations where hand shuffles are utilized, the casino executive has placed a high priority on creating a shuffle that will protect his casino against advantage players, and has not considered what the complicated multi-pass shuffle will cost the casino in lost rounds of play due to time and motion problems. It's many executives' understanding that it's better to protect the casino against shuffle-tracking players, which seems tangible, than it is to worry about intangibles, like the effect of wasted time. This belief is actually convoluted, since the effect of time and motion issues can be calculated, while not one in ten casino executives can give a realistic estimate as to the number of professional shuffle-tracking teams posed to attack a weak blackjack shuffle. As a gaming expert well-versed in advantage play, I would be willing to say that there are no more than a dozen professional shuffle-tracking teams worldwide, indicating that most shuffle-tracking concerns are highly overblown.

So how much does a multi-pass shuffle cost the casino? First, we need to put together reasonable assumptions and a benchmark with which to analyze the situation. Then we need to compare several different base-shuffle conditions against the benchmark situation to determine relative costs or gains. Then we need to consider what external cost a simple shuffle will extract from possible advantage-play situations.

For this exercise, to develop a realistic example, we'll use a double-pass shuffle of a 6-deck-shoe game as the benchmark condition, which is consistently used throughout the industry. A two-pass shuffle consists of two entire shuffles of the six decks of cards, which, beginning when the remain card stub is removed from the finished shoe and ending when the cards are cut and placed back into the shoe, lasts approximately two minutes. Next we need to estimate the number of times per hour the six decks need to be shuffled. This is based on the number of players on the table at a given time, the number of cards each player uses on average (2.7 has been established by several blackjack experts as the correct average), and the anticipated number of rounds that will be dealt in the sample hour.

Table 3

Estimated Shuffles Per Hour of a Two-Pass 6-Deck Shuffle	
Time of shuffle (minutes)	2.0
Decks dealt per shoe	4.5
Number of players and dealer	5.5
Average number of cards per hand	2.7
Estimated rounds per hour	60.0
Shuffles/shoes dealt per hour	3.8
Percentage of time dealing	85.0%

Based on the medium-sized casino used in the previous Blackjack Performance chapter, calculations for the two-pass shuffle indicate the six decks will be shuffled 3.8 times per hour, while utilizing 85% of the hour dealing cards and achieving wagering decisions. If it's assumed that the shuffle time will increase to a three-minute shuffle because of the institution of a more complicated third-pass shuffle, the percentage of dealing time drops to 76%, resulting in an approximate loss of four rounds per hour.

Based on these assumptions and metrics, the complicated three-pass shuffle will cost the medium-sized casino approximately $500,000 in lost revenue annually. Is this a fair tradeoff for protecting the mid-sized casino against a handful of expert shuffle-tracking teams?

On the inverse side of this argument, a decrease from a two-minute shuffle to a single-pass minute-and-fifteen-second shuffle will increase the casino's revenue potential. This increase, as compared to the two-pass shuffle, could result in a gain of $375,000 annually, given the same assumptions and metrics.

No Mid-Shoe Entry

A number of casinos have gone to the procedure of prohibiting entry onto an active blackjack game after the cards are shuffled and the first hand has been delivered. This technique not only has been applied to shoe games, but to the double-deck hand-held game as well. The reason most executives have turned to no mid-shoe entry is to discourage card counters who count down the game from off the table, then jump in and wager on hands when the deck's card composition is in the player's favor. Some executives also claim that this procedure is in place to keep players on the table from getting upset at other players jumping into the game and changing "the flow of the cards." Regardless of their reasoning, no mid-shoe entry prohibits customers from placing bets, and subsequently limits to some extent a customer's ability to wager his money. Is the money lost through eliminating wagering opportunities less or equal to the money saved by the casino that discourages professional players from back counting?

In order to develop a true picture of the effect of no mid-shoe entry, we need to establish what percentage of the time a given blackjack game is in a mid-shoe-entry situation. Then we need to establish an assumption as to what percent of our blackjack customers are inhibited by this game-protection procedure.

Calculating the total time of a mid-shoe-entry condition is fairly simple. Based on the previous metric, the percentage of time a mid-shoe entry condition occurs is 79% (see Table 4). If our assumption is that an average of 5% of our customers are in a mid-shoe situation, not able to immediately wager due to moving from one table to another, returning to their table of origin, or entering the table area to begin play, the effect is equivalent to a reduction of play on all tables by 2.4 rounds (79% x 5% x 60 rounds). The example given in Table 4 is based on a 6-deck-shoe game. However, using the same calculations, the double-deck game isn't much different. No mid-shoe entry costs approximately 2.2 rounds per hour in the double-deck version, even though entry possibilities increase from 3.8 to 11.4 (times per hour the decks are shuffled).

Table 4

No Mid-Shoe Entry Effect on Rounds Dealt in a 6-Deck Game	
Estimated rounds per hour	60.0
Shuffles per hour	3.8
Percentage of time dealing	85.0%
Mid-shoe per hour	79.0%
% customers	5.0%
Cost in rounds per hour	**-2.4**

When questioned about the realistic possibility that no mid-shoe entry costs 2.4 rounds an hour, I like to use the example of the "in-sync dealers." What if all your blackjack dealers just happened to be in total sync with each other and just finished shuffling and dealing the first hand as a new player approached the table? The new player would have to wait approximately 14 minutes before he could wager on a hand of blackjack! This is an extreme example, but there will be many situations where busy periods and availability of limit tables will prevent your customers from betting when they want to, forcing them to sit and wait or search for possible non-mid-shoe-entry situations.

The cost of eliminating two rounds per hour to a medium casino is approximately $250,000. Does the elimination of back-counting advantage players justify this?

Limiting Deck Penetration

This is probably the most abused game-protection procedure and it costs the casino the most money. Many executives believe that a decreasing blackjack hold percentage can be corrected by decreasing the number of cards dealt to the players before the shuffle. Their reasoning? The lower hold percentage is due to an increase in card counters playing in the casino. This is a major mistake made over and over again. How can the act of limiting wagering opportunities help create more revenue for the casino? All that the process of decreasing the shuffle point and limiting deck penetration accomplishes is lowering revenues.

Table 5

Effect of Changing Deck Penetration in the 6-Deck Game	
+/- number of decks	0.5
Number of players plus dealer	5.5
Average number of cards per hand	2.7
Shoes per hour	3.8
Additional/fewer rounds played (hour)	6.7

Based on the previous metrics and using a 4.5-deck shuffle point as the benchmark shoe penetration, the change in shuffle points in the 6-deck game alters the number of rounds obtainable per hour by approximately 6 to 7 rounds. This means that a procedure change decreasing the 6-deck shuffle point from 4.5 decks to 4 decks will cost the medium-sized casino between $770,000 and $900,000 in lost revenue because of loss in hand production.

(Note: Cutting out a half-deck or 26 cards [0.5] equals 1.75 lost rounds. Lost rounds are calculated by dividing the number of cards used [5.5 x 2.7 = 14.85] into 26 cards. The number of rounds lost multiplied by the number of times the decks are shuffled equals the total number of rounds lost per hour. In theory, the lost rounds are replaced by additional time spent shuffling. The inverse situation also explains why deeper deck penetration increases rounds dealt per hour and increases blackjack's profit potential.)

Of course, the models used to calculate shuffle time, no mid-shoe entry, and changing deck penetration are an approximation of the true effect for several reasons. These include the nature of the models' own changing situations and shifting metrics, as well as their application in the real world. Nonetheless, even if the negative effect is diminished by half, the losses in revenue sustained from these three game-protection procedures cannot be justified by any possible gains they may create by discouraging advantage play.