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Addressing the MLB Draft: How Draft Strategy Can Lead to Organizational Success over Time

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Abstract: This study examines the effectiveness of traditional draft strategies over time. Specifically, this study will focus on the impacts of the Major League Baseball (MLB) First-Year Player Draft on organizational success. Three strategies to be examined are drafting by (1) positional need, (2) best player available, and (3) forecasting. Deciding how a team drafts will determine their future success, thus it is vital a team drafts effectively. Teams with different availability of resources will place different emphasis on the MLB Draft; for a team with more resources, drafting optimally is less important than a team with fewer resources. Using a Systems Dynamics approach, these draft strategies will be compared to each other, providing a recommendation based on team characteristics which could maintain success over time. This study will take into account the draft, development through the minor leagues, and the ultimate impact a drafting strategy will have for an organization.

Keywords: Baseball, MLB Draft, Draft Strategy, Systems Dynamics

1. Introduction

This study uses Systems Dynamics to explore the relationship between organizational draft strategy and organizational success. The basis of the study follows the Systems Dynamic modeling process, which includes: (1) Problem Articulation, (2) Formation of a Dynamic Hypothesis, and (5) Policy Design and Evaluation (Sterman, 2010). The outcome of the study is to provide a policy recommendation for teams seeking to optimize their draft strategy based on organizational characteristics, needs, and available team resources.

First, a background of the MLB First-Year Player Draft is necessary to understand the situation. The draft consists of 40 rounds, with each team receiving a pick per round (with a few exceptions). Since there are 30 teams, this equates to roughly 1200 selections (Montenegro, 2014). High school seniors, junior college players, as well as college players who have completed at least three years of college are eligible for the draft. Scouts gather in a so-called "war-room" several weeks ahead of the draft in order to spend the adequate time ranking over 1000 players (Montenegro, 2014). It is crucial for an organization to draft well if they want to achieve success (Blengino, 2014). No particular draft strategy has shown to be more effective than another, however if an idea was presented, teams would be willing to invest in it (Remington, 2014). Historically, every team has shown they are equally successful at finding talent in the draft as the other teams (Spurr, 200). Additionally, players are picked in the order they should be picked in, meaning the best players are usually picked in the first round (Spurr, 2000).

A team may address a weakness in their roster in three ways: drafting, trading, and free agency. Although it fills an immediate need without delay to sign talent in free agency, some teams cannot afford to utilize this method (Shirk, 2018). Trading is also a method, however this is inefficient because it is viewed as a short-term solution. Teams generally look to trade established players only if they feel they will not be able to retain the player when they become eligible for free agency. A team would not trade an established player they wanted to keep unless they perceive the return to be much greater than the loss they expect to incur. Therefore, when trading for established players, teams look to trade a combination of prospects who they believe have the potential to outdo the production they were receiving from the established player. The prospects a team looks to move for an established player are generally prospects who cannot move up through the minor leagues because there has been a logjam of talent at their specific position within the organization. Thus, a team who trades often can indicate organizational inefficiency at managing their minor league system and drafting policy.

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The success of this study depends on explaining the logic behind why one particular draft strategy is more efficient over time than the alternatives, which leads to an increase in team success. First, proving the existence of three different strategies will help to define the problem and formulate the dynamic hypothesis.

Drafting the Best Player Available (BPA) is the most common form of drafting done in the MLB. Since a player must advance through a minor league system to reach the major leagues, there are roughly four levels of play an individual must surpass before they make a major league roster. With all these levels, there are a great number of prospects who never actually make the major league level. Thus, a common strategy when drafting is to look at all the prospects available and simply pick the highest ranked player remaining (Bates, 2017). According to historical data, of the first 60 players picked, only half of them will make it to the major leagues within five years. Of the 30 who make it to the major league, only 17 of them will register a WAR (wins above replacement- a statistic which measures the overall contribution of a player to a team as compared to an average replacement) greater than 1.0 (Bates, 2017). A WAR of 1.0, for example, means that the player has generated one additional win to his team which an average replacement would not produce. Since no other draft strategy has consistently proved effective enough to counter this line of thinking (Dodd, 2017). Thus, the logic continues, since the draft is essentially throwing darts, pick the player the scouts rated as the highest available.

Drafting by Positional Need (PN) is the second strategy to be examined. If a team has enough quality players at any position, they will look to draft players at other positions where there are needs. This is also a common draft strategy used in baseball. The LA Angels went into the 2017 draft lacking good players in the Outfield and at Pitcher, and as a result they picked three outfielders and seven pitchers early in the draft (Page, 2017). The Chicago White Sox look to go into the 2018 summer with the same strategy. As a small-market team, the White Sox cannot afford established free agents (Shirk, 2018). For teams who cannot afford free agents, the draft is paramount to their organizational success.

The third draft strategy to examine is forecasting. This idea of this draft is to estimate the time that a player will be ready to play in the major leagues, and look to have this player ready at the moment a need opens up on their major league roster (Shirk, 2018). This would allow teams to quickly fill a need when it arises and avoid paying a premium for free agents. Forecasting is not used as often as the other two methods. However, for a smaller market team it could be more important to have organizational efficiency than a larger market team, who can afford to spend money to fill a hole in the roster when a problem arises. Forecasting is not used as much as the other two methods due to the uncertainty and risk in its nature. To operate at maximum efficiency, the timing of a prospect becoming ready for promotion to the major leagues would have to coincide with another established player leaving the team. The timing of a forecasting strategy is extremely difficult to predict, just one reason which makes it the toughest conceptual draft strategy out of the three most common. Due to its complexity, many teams tend to shy away from this method because they could be hesitant to take this level of risk.

2. Problem Articulation

In order to determine whether one draft strategy is consistently more successful than another over time, a causal loop diagram was constructed to compare interactions and feedback structures among variables within each strategy.

The causal loop diagrams center around three key variables: (1) *Team Success* is an overall measure of a team's ability to win games. This is be represented by winning percentage. Winning percentage is a good measure of success because only a team that wins is considered to be successful. If a simulation were run, the winning percentage could be a quantifiable figure. Since it is a percentage, this variable would have a carrying capacity of 1, or 100% of games won. In baseball, with 162 games played per season, it is impossible to win all 162 games. A more realistic goal would be to win 100 games, which is slightly less than two-thirds of games. Winning 100 games in a season essentially guarantees a team to be the best team in their conference. The goal of building a successful organization is to consistently be the best team in the conference, thus having the goal of 100 games won per year is a good target goal. The second variable, *Transactions Necessary,* is a measure of how many transactions a team would need to make in order to be a competitive team. These transactions are assumed to have an immediate effect on the major league team, thus transactions would be limited to trades or free agency and exclude the players drafted. A transaction would be necessary to make if there was a weakness in the roster; a team cannot achieve a high mark of success if they have several weaknesses in their roster. The third key variable, therefore, is *Weakness in Roster*. This variable highlights what a team does well versus what it needs to improve on before being considered successful. For example, if a team has excellent pitching but does not hit well, they would have at least eight weaknesses in their roster, as there are at least eight players per game who must hit well and create offense. A good team may have as few as three to five weaknesses in their roster out of 25 players on the major league team, whereas a bad team can have up to 25 players who can be considered as a weakness. Rosters expand to 40 players in the major leagues for the duration of September, however, this will be discounted in the study.

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3. Formulation of Dynamic Hypothesis

Drafting the Best Player Available (BPA) will not increase a team's success over time because it will lead to a backlog of players at positions where a roster is already strong. Additionally, it will not address a weakness in a roster as it arises, therefore a team's roster strength will not improve. Drafting by Positional Need (PN) will also not increase a team's success over time because it will create a surplus of prospects at any given position. Due to the time delay between drafting a player and that player becoming ready for promotion, this weakness in the roster could already be filled by the time a player is ready to compete at the major league level. Having too many players competing for too few roster spots will lead to a prospect backlog and inefficiency, rendering this strategy ineffective as well. A drafting strategy of forecasting, conceptually, will be the most effective over time because it is designed to fill a roster's weakness at the moment it arises, thus ensuring there are as few weaknesses in a roster as possible. Especially for smaller market teams that cannot afford to pay players in free agency, a strategy of forecasting will, in theory, ensure they maintain a competitive status. Although no drafting strategy will be perfect, forecasting has the soundest systemic structure and has the potential to yield the strongest results over time.

3.1 Estimations and Assumptions

In order to synthesize a feasible solution, assumptions must be made. First, the causal loop diagrams cannot take into account an injury that occurs to a player. Injuries, unfortunately, are a part of the game, however, they cannot be taken into account when creating a draft strategy. Second, it must be assumed that each team operates evenly with the talent in their scouting department; teams must be as good as each other when it comes to finding good players and picking them accordingly. Third, in conjunction with the research done by Dr. Spurr, no team is superior to another team in the realm of player development. Fourth, it is preferable a team that follows a forecasting draft strategy is a small market team. A larger market team will be able to afford marquee free agents which will render a draft strategy less important to future success, as they can address a weakness in their roster more immediately and effectively than a team with less financial flexibility. The importance of an effective draft strategy is also important to a larger market team, however they have more room for error than a team which cannot afford to pay a premium for free agents. Fifth, players who are eligible for free agency after their required service time will leave the team and sign elsewhere. This creates weaknesses in the roster and roster turnover which can be filled via the MLB Draft and other outside moves. Since a roster spot opening up starts the cycle, it must be a consistent source to create a need in the system. Lastly, a player's skill in the major leagues is binary; they are either considered to be a strength or a weakness. There is no ability to factors a player's skill level to range from a suitable player to a superstar in the analysis without concrete data to run a simulation model.

3.2 Causal Loop Diagrams

A causal loop diagram will create clarity in terms of the behavior of the system. Variables which are linked are depicted with arrows connecting them. The arrows will have either a plus or a minus attaching the variables; this arrow indicates polarity, not a correlation. A positive polarity between variables means that the two variables will move in the same direction as one another. A Negative polarity means that the two variables will move in opposite directions.

The variables may interact to form either a balancing loop or a reinforcing loop. A balancing loop limits growth in the system and can help bring or restore stability. The long-term behavior of this loop is goal-seeking toward some threshold established by its value variables. A reinforcing loop produces exponential growth in a positive or negative direction. These two types of loops are the only loops in system dynamics models, and the prevalence, interactions, and/or dominance of these feedback loops within a system is responsible for the overall behavior of the system. A causal loop diagram for each of the respective draft strategies will provide a tool to understand how the underlying feedback structures of roster management drive the behavior of the team over time.

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3.2.1 Best Player Available Loop

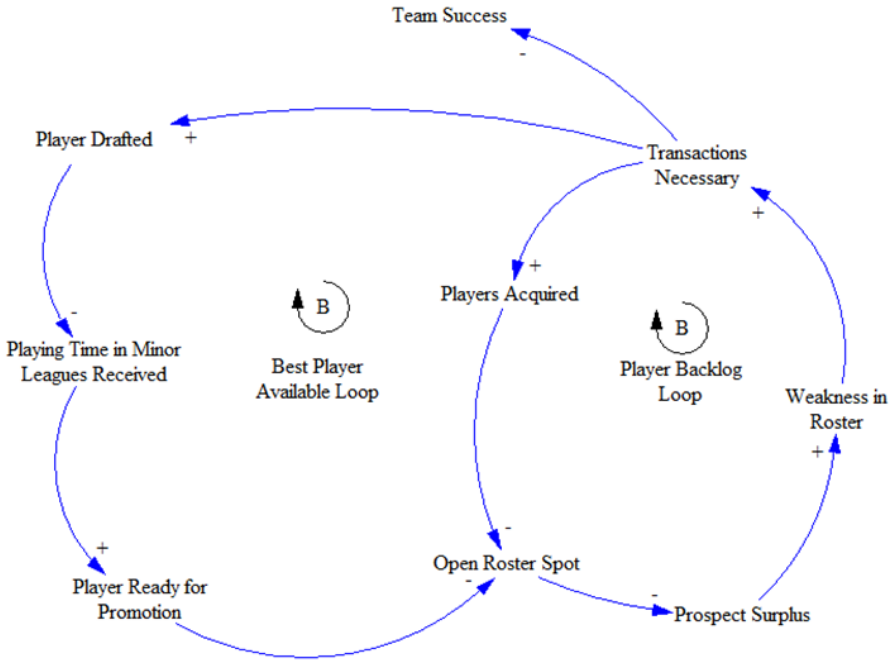

Figure 1. Best Player Available Loop

This figure illustrates the BPA strategy. The behavior of this draft strategy creates a balancing loop collectively. The two individual balancing loops listed representing the overall draft strategy are the Player Backlog Loop and the Best Player Available Loop.

When picking the best player available, that player will be inserted into the organization's minor league system. The BPA Loop thus begins its cycle. The more players drafted, the less playing time in the minor leagues which are distributed to players. This is represented by a negative polarity. The more playing time players receive in the minor leagues, the more players who are ready for promotion to the major leagues. This is a positive polarity. The more players who are ready for promotion, the fewer open roster spots are available on the major league roster, a negative polarity. With fewer available roster spots, there will be a greater prospect surplus created, a negative polarity. More prospect surplus indicates more weakness in the roster, a positive polarity. Since there would be more weaknesses in the roster, a higher number of transactions would be necessary for a team to be competitive, a positive polarity. Completing the loop is the draft which comes around, and more players are drafted into the position. The loop as a whole is a balancing loop. Exiting the loop from transactions necessary is team success. The more transactions which are necessary, the lower a team's success will be, a negative polarity.

The Player Backlog Loop begins with transactions necessary. The more transactions which are necessary, the more a team will engage in trades and free agency during the season. If a team acquires more players, this becomes a positive polarity. With the addition of more new players, fewer roster spots will be available, a negative polarity. The fewer roster spots which are open, the more prospect surplus will be created, a negative polarity. With more prospect surplus, the more weaknesses there are in the roster, a positive polarity. The more weaknesses in a roster, the more transactions which are necessary, completing the balancing loop and creating a positive polarity.

Over time, I would not expect this draft strategy to change a team's success. The long term behavior according to the diagram, with two balancing loops, would also support this claim. This draft strategy will cause the largest amount of roster turnover compared to the alternatives due to its construction. With this strategy, a team is looking to stockpile talent, regardless of what position the player plays. Then, the team will look to trade a number of prospects for an established player. While this is certainly one way to attack the problem, it is not the most efficient alternative. Trading for an established player will net a short term solution and will not attack the root cause of organizational inefficiency.

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3.2.2 Positional Need Loop

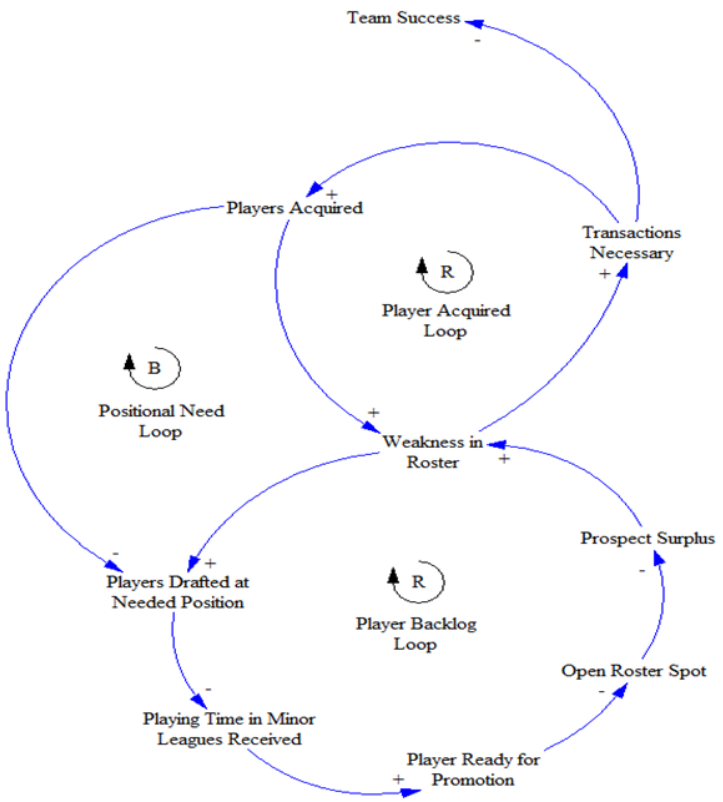

Figure 2. Positional Need Loop

This figure illustrates the PN Strategy. The behavior of the draft strategy creates a balancing loop collectively. The three individual loops listed representing the overall draft strategy are the Positional Need Loop, the Player Acquired Loop, and the Player Backlog Loop.

When using the PN Draft Strategy, the cycle will begin when an organization realizes they have a weakness in their roster at a certain position. As a result, they will pick several players at that position. This is indicated by a positive polarity. The more players they draft at the position in need, the fewer playing time each player will receive, a negative polarity. With more playing time in the minor leagues, the faster a player is ready for promotion, a positive polarity. With more players ready for promotion, there will be fewer roster spots available, a negative polarity. With fewer open roster spots, a higher prospect surplus is created. A higher prospect surplus indicates more weaknesses in a roster, a positive polarity. With more weaknesses in a roster, more transactions are necessary to become a competitive team, a positive polarity. Exiting the loop is team success which is a reflection of the transactions necessary, a negative polarity. Continuing the loop is a team acquiring players as a result of the transactions necessary, a positive polarity. If a team were to acquire a player, they would see that position as fixed in the interim, and thus they would draft fewer players at the position, a negative polarity which completes the balancing loop.

The Player Backlog Loop is a positive reinforcing loop, meaning that the number of players who are waiting their time to be called up into the major leagues only increases with time. This loop begins when a player is drafted at a needed position into the system. The more players drafted at a single needed position will cause all the players to receive less playing time, a negative polarity. With less playing time, fewer players are ready for promotion, a positive polarity. With fewer players ready for promotion, there will be more open roster spots, a negative polarity. With more open roster spots, there will be a decreased waiting time for a player to get called into the major leagues, implying a lesser prospect surplus and a negative polarity. With a higher prospect surplus, there are more weaknesses in the roster, a positive polarity. When a team realizes they have weaknesses in the roster, they will draft players at the needed position, indicating a positive polarity and completing the positive reinforcing loop. This loop acts as a positive reinforcing loop because after several iterations, teams will still be picking players at the same position because it is still a weakness in their roster and therefore increasing their prospect surplus at the

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position. There is a time delay which explains the reinforcing behavior. A prospect will take more than one year to develop in the minor leagues, so by continually adding players at the position, they will increase their surplus due to the time delay.

The Player Acquired Loop will act as another positive reinforcing loop. The more weaknesses in a roster, the more transactions necessary, a positive polarity. The more transactions necessary, the more players a team will acquire, a positive polarity. The loop will complete because a player acquired will address a roster weakness, however it will also create others. Since this indicates organizational inefficiency, by acquiring more players via trade, more weaknesses in a roster are created. All polarities are positive, thus indicating a positive reinforcing loop.

I would expect the long-term behavior of using the PN strategy to neither increase nor decrease a team's ability to win games. If a drafted player were immediately able to fill a weakness in the major league roster, then this could perhaps be an effective draft strategy, but due to the time delay, this is not the case. The time delay will only serve to increase the Player Backlog Loop; the longer the time delay, the more the backlog will increase. Also, this is a reactionary draft strategy. As such, a team must wait until they recognize a current weakness in their roster before they act on it. A simulation model with a time delay on a reactionary policy, if graphed, will display oscillating results. This means that the team's success would fluctuate with time. Given the study's primary focus is to maintain a competitive state over time, this is not an ideal draft policy for major league baseball.

3.2.3 Forecasting Loop

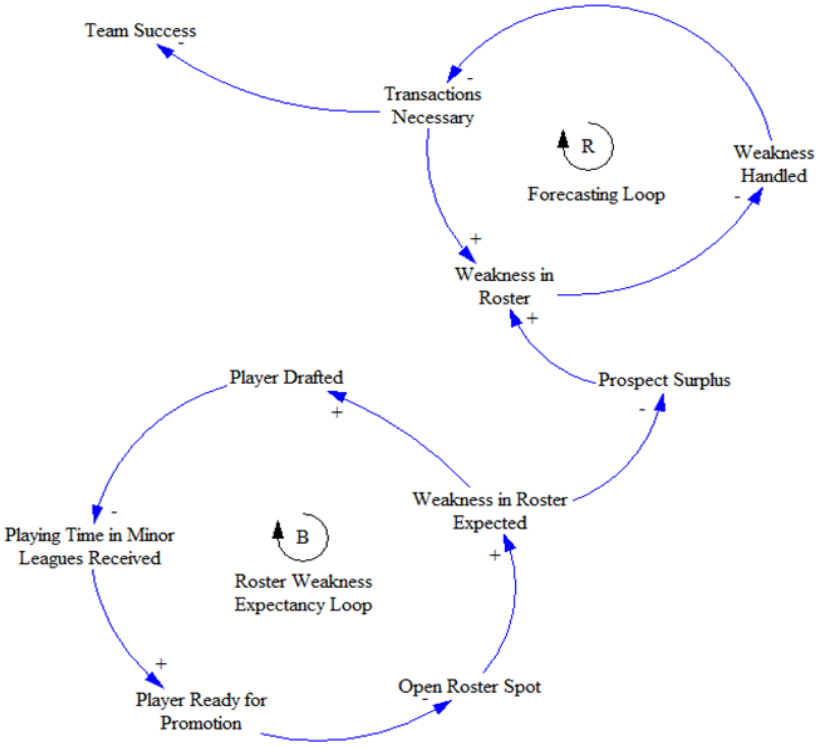

Figure 3. Forecasting Loop

This figure illustrates the Forecasting Draft Strategy. The behavior of the overall draft strategy creates a positive reinforcing loop for the major league team, and a balancing loop for player drafting and development. They are referred to in the above figure as the Forecasting Loop and the Roster Weakness Expectancy Loop.

This draft strategy begins with an expected weakness in the roster. As mentioned in the Assumptions and estimations section, it is assumed that a player will leave the team for a more lucrative contract when the player becomes eligible for free agency. A player becomes eligible for free agency after they have completed six full years of MLB Service Time. Since the team knows they will not be able to afford the player in question and cannot afford to sign a comparable free agent, they will anticipate this departure in their draft strategy, and draft a player at the position before the need arises. The more weaknesses

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expected, the more players who will be drafted at key positions, a positive polarity. With more players drafted, there is less playing time to be distributed evenly, a negative polarity. With less playing time to be distributed, fewer players will be ready for promotion, a positive polarity. With fewer players ready for promotion, more open roster spots will be available, a negative polarity. With more open roster spots, there will be more weaknesses in the roster expected, causing a positive polarity. This completes the Roster Weakness Expectancy Loop, and it is a balancing loop because drafting players who project to fill an opening will limit the backlog of players. Ideally, a balancing loop for minor league development is preferred.

Next begins the Forecasting Loop. This loop begins with Weakness in Roster Expected, which leads to Prospect Surplus. The more weaknesses that can be expected in a roster, the lower the prospect surplus will be, a negative polarity. With a lower prospect surplus, there will be fewer weaknesses in a roster because it means that players are in the majors and are helping the team win games as opposed to waiting in the minor leagues. This is a positive polarity which is a key indicator of organizational efficiency; since there is a lower prospect surplus, the team is operating with more efficiency due to a more sound systemic structure. With fewer weaknesses in a roster, more weaknesses will be handled due to the forecasting strategy. This is a negative polarity. With more weaknesses handled, there are fewer transactions necessary for a team to become competitive, a negative polarity. Fewer transactions which are necessary indicate fewer weaknesses in a roster, a positive polarity. This completes the Forecasting Loop. This is a reinforcing loop because the links between variables will cause the system to continue to grow towards its end state, which is Team Success. If fewer transactions are necessary, the higher a team's success will be because they will have fewer weaknesses to address. The loop will continue this behavior until it reaches a carrying capacity, and continue to operate at the carrying capacity.

The long-term behavior of this draft strategy is continued growth towards a carrying capacity. This strategy allows for the most sustainable success over time because of the nature of its construction. Assuming a team cannot afford marquee free agents, the best way to systemically build a successful team is through the MLB Draft and player development. Trading for a player is a temporary solution; teams will likely only trade a good player if they know they will not be able to re-sign the player once they become eligible for free agency. Therefore, it becomes a temporary solution as in this instance because the player will stay with their new team for only one or two seasons before they leave for free agency themselves. A team would only make this kind of trade and give up key prospects if they are trying to make a playoff push. If a team is able to develop talent themselves, they are able to keep that player for six seasons all at a lower cost than the price of a free agent. Due to the proactive ability of a team to diagnose an impending weakness in their roster, they can formulate a solution before the problem exists. Drafting by using a forecasting strategy is the best alternative to the MLB Draft due to its systemic design over time and ability to realize long-term solutions, which also incur a cheaper cost than a short-term solution.

5. Conclusion

Using a draft strategy of forecasting makes the most systemic sense out of the three possibilities because it is the only draft strategy that solves the root cause of organizational inefficiency. Drafting using Forecasting is a strategy that ensures sound systemic efficiency within an organization, and it is likely to greatly enhance a team's capacity to win if its top selections in the draft were picked according to this strategy. Building a team through the draft and not relying on free agent acquisitions or trades is not only the most proactive method to mitigating a long-term problem, but it is also the cheapest solution. This is because (1) it solves a problem before it arises and a team's roster strength is compromised and (2) because a player gets paid significantly less during their first six years of MLB service than they do once they sign a bigger contract in free agency. Teams that operate on a smaller budget should look to use forecasting almost exclusively with their top picks in the draft, as those players have the best statistical chance of making an impact at the major league level. If a team has the financial flexibility to sign whomever they wish in free agency, they could look to the BPA or the PN strategy because they will be more active in trading; however, their organization will continue to operate inefficiently. Drafting using BPA makes sense at first glance, however it only works long-term if a team has the money to sign players where a weakness may arise. Drafting using PN makes sense at first, but the time delay it faces renders it likely the most inefficient strategy to employ. With a large amount of teams investing more heavily in analytics and looking to be smarter with the money they spend, employing a forecasting draft strategy can be a key pillar to future success.

6. Recommendations

While forecasting presents an appealing concept, it may not be the best strategy for every team. Certain teams, by the nature of their available resources, will have either an increased or decreased emphasis placed on drafting players they intend to play at the major league level. Although I believe every team could benefit from a draft strategy of forecasting, three criteria

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could create an ideal scenario for its use: (1) they have top level scouts, (2) they are a small market team with limited resources, and (3) they are a team two seasons away from a total roster overhaul.

First, a team must have elite scouts. The success of the strategy depends on a scout correctly predicting when a roster spot will open up. This means the player who is drafted must be ready to fill the open spot when it arises. If this projection is incorrect, then it will have a severe chain reaction; therefore, scouts are the most important part of this strategy. Having better scouts will give this draft strategy the greatest chance of success.

Second, a team is operating with limited resources in a small market. The success of a smaller market team is much more dependent on a successful draft than it is for a larger market team. If a draft strategy such as this is going to work, a team would need to fully commit to it. A larger market team can afford to fix a mistake as it arises which leads to the strategy not being followed as strictly as it ought to be. Creating a team which is designed to beat teams with a higher payroll is a slow, meticulous task and the process must be followed with full commitment.

Third, an ideal scenario to begin a draft strategy for forecasting is when a team is two years away from beginning their rebuilding process. Two years is the cushion allotted for a player drafted in the first year to be ready for promotion to the majors in the third year. A rebuilding process is ideal to begin forecasting because a team who is rebuilding will try to offload players for younger prospects. After forecasting ahead of a rebuilding process, a team will be competitive faster than if they followed a different strategy. Although a team in any state could start forecasting immediately, this is the most ideal situation to implement the new process.

Forecasting is a concept which deserves to be further investigated by Major League Baseball. Using a Systems Dynamics approach, it will lead to the best results over time, conceptually. Although every team should investigate forecasting, I believe its best chance for success is with a team with elite scouts, operates in a small market, and is two years away from beginning a rebuilding process.

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