



## Operational performance: The mediator between human capital developmental programs and financial performance<sup>☆</sup>

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### ABSTRACT

In accordance with the resource-based view (RBV) and human capital resources literatures, we investigate positive outcomes derived from human capital development programs (HCDP). We theorize that superior HCDP represent competitive advantage that improves operational performance and subsequently leads to positive financial outcomes. Data from 2003 to 2011, including 30 organizations from Major League Baseball (as well as their subsidiaries), were analyzed using regression models to examine how HCDP affect financial performance through operational performance. The findings support our hypotheses: Better HCDP lead to operational performance, which leads to greater revenue and sales.

### 1. Introduction

How organizations use resources is a storied topic in strategic management (e.g., [Barney, 1991](#); [Wernerfelt, 1984](#)) because it affects their competitiveness, profitability, and potential for survival, among other things. Training and development programs can serve as a resource that enhances organization outcomes. Training is a systematic approach to improving employees' skills ([Arthur, Bennett, Edens, & Bell, 2003](#); [Bishop, 1994](#); [Salas & Cannon-Bowers, 2001](#)) and job performance ([Aguinis & Kraiger, 2009](#); [Hill & Lent, 2006](#)), and ultimately enhancing organizational performance ([Bartel, 1989](#)). Meta-analytic findings show training and development differs in effectiveness across organizations ([Arthur et al., 2003](#)) and, thus, may be viewed as an organizational capability. We examine multi-level training programs that continue across organizational levels as an employee progresses up the corporate ladder, what we refer to as human capital development programs (HCDP). HCDP can be found in many organizations; public accounting firms, for example, typically have multi-level development programs for employees at different career stages (e.g., staff accountant, senior accountant, manager, senior manager, director, partner, and principal).

We posit that HCDP are an organizational capability or "a bundle of resources and capabilities linked together through firm-specific routines which can behave both as a competitive constraint as well as the source of sustainable value" ([Madhok, 1996](#), p. 578) and that HCDP are

an appropriate proxy for important organizational differences in competitiveness often referred to as a competitive advantage. These differences in competitiveness result when an organization creates more value than rival organizations ([Barney & Hesterly, 2012](#)). To understand the effects of HCDP, we examine whether HCDP are a valuable capability that predict operational performance and whether better HCDP affect financial performance through operational performance (i.e., whether operational performance mediates the HCDP-financial performance relationship).

Data from Major League Baseball (MLB) are used to conduct our research. Similar to business organizations that have professionals in various functional areas, all 30 MLB teams have positions requiring specialized skills, such as pitchers, infielders, catchers, etc., and all have programs to develop the skill sets of players in these positions (i.e., minor leagues). A player who performs well within the developmental system may be promoted through various developmental stages and eventually make it on an organization's professional roster. Moving players with potential to the professional roster is similar to promoting talented employees up the corporate ladder in a business organization. A professional roster of a MLB team consists of 25 players, some of whom may come from an organization's internal developmental system. Players who are not a product of the team's development system are acquired in the marketplace, either via free agency or trades. In short, the sourcing decision is a recurring issue for MLB teams, as it is for other business organizations.

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Congruent with the resource-based view (RBV) of the firm and MLB, teams have varying levels of resources. For example, some teams have more capital such as wealth in the form of money or assets. Other teams may have better developmental programs. Accordingly, these resources differ across teams and serve as capabilities that work well as proxies for competitive advantage. MLB allows us to explore performance outcomes in various ways. Throughout the past two decades greater emphasis has been given to multiple performance measures such as the triple bottom line, the balanced scorecard, competitive advantage, stakeholder performance, innovation performance, varying financial outcomes, and so forth (e.g., [Berman, Wicks, Kotha, & Jones, 1999](#); [Brower & Mahajan, 2012](#); [Chen & Huang, 2009](#); [Clarkson, 1995](#)). Accordingly, within MLB we determine how better-performing HCDP work as a proxy for competitive advantage, and then how competitive advantage impacts operational performance and its subsequent effects on revenue and sales (i.e., two performance outcomes).

Further understanding the quality of HCDP answers calls for keeping the human element in strategy literature ([Powell, 2014](#)) and builds upon the microfoundations of strategy (i.e., [Barney & Felin, 2013](#); [Felin & Foss, 2005](#); [Felin, Foss, & Ployhart, 2015](#)), while simultaneously forming necessary HRM – organizational performance relationships ([Beer, 2015](#)). This helps identify how higher quality training of personnel works as a competitive advantage, and sheds light on its impact on separate operational and financial outcomes. To assess whether the sourcing of human capital impacts performance, operational performance is defined to include human capital specific elements such as employee productivity, quality of product, on-time delivery of performance, and flexibility to adapt ([Ahmad & Schroeder, 2003](#); [Youndt, Snell, Dean, & Lepak, 1996](#)) and is measured through team wins. Subsequently, we determine whether operational performance impacts financial performance outcomes of MLB team revenue (i.e., the incoming dollar amount), and sales through ballpark attendance. These MLB performance measures align our two-stage performance analysis with theory. By providing multiple and varying outcomes rather than one measure for financial performance, we can deduce generalizable conclusions relevant to MLB that also apply to other business organizations.

These performance-related contributions reveal the importance of considering multiple performance mechanisms that are infrequently explored in lieu of a single financial outcome. Further, although precisely measuring an organization's value-creating strategy (i.e., competitive advantage, [Barney, 1991](#)) can be difficult, MLB records a ranking for each team's development program that measures a team's competitive advantage based on talent acquired through scouting (i.e., a fundamental element of HCDP); it also partly reflects the total worth of each HCDP. The ranking is a product of baseball analysts' and editors' evaluations of players who have not exceeded any of the following on a major league roster: 130 at-bats, 50 innings, or 30 relief appearances. Thus, MLB provides an opportunity to demonstrate how HCDP serve as a microfoundational organizational capability that can be a source of competitive advantage. Additionally, MLB allows for a parsimonious demonstration of how competitive advantage affects operational performance, which mediates the competitive advantage-financial performance relationship. Given that teams are also precisely evaluated on wins and losses, we contribute by introducing an objective measure of operational performance and by connecting competitive advantage and operational performance—two cornerstones of strategy.

Our final contribution addresses the need to refine RBV. By better understanding how HCDP directly impact operational performance and indirectly impact financial performance we can address certain criticisms of RBV. These criticisms include: that resources may not enhance performance and that the relationship between performance and resources may be tautological ([Priem & Butler, 2001](#)), that certain empirical limitations are associated with RBV ([Armstrong & Shimizu, 2007](#)), and that RBV provides flawed logic as a theory for strategic human resource management (HRM) ([Kaufman, 2015](#)). We

demonstrate that RBV is useful because HCDP are a resource within strategic HRM that can enhance organizational performance.

We continue by first reviewing HCDP and providing an overview of the complex HCDP in MLB, including the developmental system, payroll cap, luxury tax, revenue sharing, and the developmental system as a competitive strategy. Next we develop theory grounded in RBV to present hypotheses predicting various performance outcomes. The data, methodology, and results are then described, and we conclude with a discussion of the contributions and implications, as well as limitations and avenues for future research.

## 2. Human capital development programs and MLB

### 2.1. Human capital development programs (HCDP)

Within the realm of corporate strategy, organizations must determine the foci of their business and how much of the vertical chain to control. Extending the value chain expands an organization's business and is carried out for many reasons, including, but not limited to, risk mitigation, cost reduction, synergies, managerial decisions, and exploitation of economies of scope ([Ansoff, 1957](#); [Ramanujam & Varadarajan, 1989](#)). Regardless of the reasons, the most widely analyzed determinant of value chain boundaries is its impact on performance ([Chatterjee & Wernerfelt, 1991](#)). This research has been of great interest since the mid-1900s when U.S. business organizations dramatically expanded their boundaries ([Rumelt, 1982](#)). We focus on key aspects of the value chain relationship that pertain to firm level outcomes of human capital ([Ployhart, Van Iddekinge, & MacKenzie, 2011](#)).

HCDP are depicted within the vertical integration literature as allowing organizations to conduct more of the value chain internally. Vertical integration may occur through backward integration, which addresses the supplier side of a single value chain, "where the firm takes over ownership and control of producing its own components or other inputs" ([Grant, 2008](#), p. 344). Backward integration (also known as upstream) is the focal side of HCDP and is at the core of this study. Historically this work focused on production. However, a limited number of studies have addressed how and why this is important for human capital and how organizations can develop employees to enhance organizational performance, particularly the promising microfoundations of talent ([Barney & Felin, 2013](#)). For example, [Lepak and Snell \(1999\)](#) design a framework based on the uniqueness and value of human capital and determine employment mode, employment relationship, and human resource configurations. They propose that organizations can gain competitive advantage by internally developing highly unique, highly valuable employees.

As with most strategic decisions, vertical integration has benefits and costs. [Harrigan \(1984\)](#) identified two forms of benefits: internal benefits (e.g., integration economies, improved coordination, and time savings by avoiding interactions with suppliers) and competitive benefits (e.g., improved intelligence, opportunity to create differentiation, control, and synergies). Other benefits include removing the threat of opportunism, creating synergy, reducing uncertainty, securing a supply of raw materials, protecting and controlling assets and services, accessing new forms of technology, and simplifying procurement by reducing the number of suppliers to an organization ([Balakrishnan & Wernerfelt, 1986](#); [Carter, 1977](#); [Coase, 1937](#); [Harrigan, 1984](#); [Ketchen, Eisner, Dess, & Lumpkin, 2009](#); [Klein, Crawford, & Alchian, 1978](#)). Despite these advantages, there are also disadvantages.

While vertical integration gives the organization procurement simplicities, administrative and coordination costs must be considered ([Zhou, 2011](#)). Other internal disadvantages include excess capacity and poor structuring ([Harrigan, 1984](#)). Competitively, organizations may become stuck with obsolete processes (i.e., loss of flexibility), lose information from suppliers or even exaggerate the suggested synergies ([Harrigan, 1984](#)). There are also costs of additional facilities,

equipment, and so forth, associated with building state of the art HCDP. Finally, even if vertically integrated organizations are more flexible by coordinating inputs while avoiding holdup costs (Coase, 1937; Klein, 1988), highly integrated organizations can lack flexibility and adaptability due to high switching costs (Monteverde & Teece, 1982), and confront more challenges to change through learning in stable environments (Sorenson, 2003).

Many of the above advantages and disadvantages have been studied in relation to non-human capital, but there are differences for human capital. For example, humans can behave in very unpredictable ways, such as choosing to resign from a company immediately after receiving training. Unlike most machines, humans can provide verbal feedback about their training to facilitate the specific development process, thereby adding value to the organization due to the decision to vertically integrate. Only when managers are mindful of both advantages and disadvantages can vertical integration be a useful corporate strategy utilized through HCDP to gain competitive advantage.

## 2.2. Context: Major League Baseball (MLB)

Professional athletics is an effective context for studying many organizational phenomena (Katz, 2001; Wolfe et al., 2005). Sports data provide accurate and consistent measures of success and failure over relatively long periods of time (Schrage, 2013). This is ideal for testing concepts in strategic management. For example, Holcomb, Holmes, and Connally (2009) used National Football League (NFL) data to examine managerial ability, resource quality, resource value creation, and organizational performance. More closely related to human capital, Wright and colleagues studied the fit between human resources and strategy among NCAA basketball teams (Wright, Smart, & McMahan, 1995). Management topics explored using MLB data include a relational mechanism of embeddedness through trades (Barden & Mitchell, 2007), pay distribution-performance relationships (Bloom, 1999), pay equity (Howard & Miller, 1993), resource divestment capability (Moliterno & Wiersema, 2007), managerial succession and organizational performance (Allen, Panian, & Lotz, 1979; Audas, Dobson, & Goddard, 2002), and competitive advantage (Popoff & Weigelt, 2000).

The following sub-sections describe important details about MLB as it pertains to HCDP. We examine player acquisition, describe the functions of the developmental system, and explain why organizations might choose a strategy that emphasizes player development. Additionally, we present important financial aspects of MLB.

## 2.3. The developmental system

There are two primary ways in which a MLB franchise can sign contracts with non-professional players: The first-year player draft and the international draft. The first-year player draft takes place in June and involves all 30 MLB franchises (MLB.com, 2013), each of which selects amateur players. The pool of draft-eligible players includes unsigned high school players who have decided to forego college, junior college players (who are eligible to be drafted at any time), or players participating at four-year colleges and universities who have completed their third year of college (MLB.com, 2013). Once franchises identify players who are draft-eligible, they select players based on the draft order, which is determined by win-loss records of the previous season with priority given to poorer performing teams in order to increase parity throughout the league.

A second opportunity for signing undrafted players occurs during the international signing period. This begins July second and allows franchises to offer contracts to international prospects. To be eligible, players must be amateurs, meaning they have not signed a professional contract, be a resident of a country outside of the U.S., Canada, or a U.S. territory (e.g., Puerto Rico), and be at least 17 years of age before September of that year (MLB.com, 2013). Many talented players sign contracts in early July; however, this period extends through June 15 of

the following year (MLB.com, 2013). As with the domestic draft, poorer performing teams are awarded earlier choices.

After players sign contracts, most enter a club's HCDP rather than immediately join the professional roster. In short, drafted players enter franchises under what we label the “make” categorization through assignment to one of the franchise's developmental teams at the beginning of the next season. Each team's HCDP contains six levels of play, and the newly drafted player's ability determines his placement level. From novice to advanced, there are two levels known as “rookie ball,” two levels of Class A (i.e., Low A and High A), Class AA, and Class AAA. For example, the Minnesota Twins have the following developmental teams in their system (from lowest to highest level): Gulf Coast League Twins, Elizabethton Twins, Cedar Rapids Kernels, Fort Myers Miracle, New Britain Rock Cats, and the Rochester Red Wings (Baseball Reference, 2013). Once assigned to a level of play in the HCDP, progression depends on a player's performance and demand for a player in upper leagues (or on the professional roster). There is no definitive time frame to make a professional roster, an aspect of uncertainty that comes with developing talent. Exceptionally talented players often advance through the HCDP in one to two years. Others may advance much slower or not at all. Many players never make it to the professional roster.

## 2.4. Payroll cap, luxury tax, and revenue sharing

Payroll cap, luxury tax, and revenue sharing play varying roles in how organizations acquire players in professional sports. The absence of a payroll cap in MLB, which exists in most other professional sports, allows players to earn up to their market value (i.e., how top managers are compensated in business organizations), but highlights the large disparity in purchasing power between large-market teams (e.g., New York, Los Angeles, and Boston) and small-market teams (e.g., Cincinnati, Tampa Bay, Kansas City). Market size does not determine team performance (Schmidt & Berri, 2002), but some positive effects may come from large-market opportunities (e.g., larger television contracts), namely, some of this capital can help secure better players.

In addition to awarding poorer performing teams preference in drafting players, MLB has a luxury tax and revenue-sharing program to narrow payroll disparity. The luxury tax, formally called the Competitive Balance Tax, dissuades teams from spending excessive amounts on players' salaries. A threshold for player payroll is established by league management; for example, in 2013 it was \$178 M (Sporting Charts, 2013). Teams that exceed this amount are taxed on payroll that exceeds the limit; this appears to deter most teams. Yet over time certain large market teams' fans (e.g., New York Yankees) have grown to expect paying luxury taxes (Pesca, 2014). As for revenue-sharing, unlike some professional sports leagues (e.g., the NFL) where revenue is earned on a national level, much of MLB revenue is generated and retained on the local level. The concern is that small-market teams cannot generate the local revenue of large-market teams and therefore will lack the money to acquire adequate talent to be competitive. As a remedy, MLB created a system in which all teams pay 31% of net local revenue to be combined and equally distributed to all teams (CBS News, 2008). Large-market teams are known as “Revenue Sharing Payor Clubs” (i.e., teams which pay a marginal 31% rate on local revenues) and small-market teams are known as “Revenue Sharing Payee Clubs” (i.e., teams that receive a portion of the additional marginal rate) (Brown, 2010; Thurm, 2012). Thus, regardless of market share, all teams should have resources to spend in the free agent market.

## 2.5. The developmental system as a competitive strategy

Despite a luxury tax and a revenue-sharing system, MLB team payrolls are far from equal. In 2013, the top seven highest team payrolls were, on average, \$124 M more than the seven lowest team payrolls (USA Today, 2013). This imbalance might provide large-market teams

with a significant performance advantage. However, due to the strength of developmental programs and the inherent uncertainty of future player performance, even for star players, this is not always the case. With less revenue, small-market teams may choose a make, rather than buy, approach in order to field a competitive team. To accomplish this, small-market teams might trade soon-to-be-expensive top talent for high potential minor league players to build a younger and cheaper yet still talented team.

Bill DeWitt Jr., the Yale (B.A.) and Harvard (M.B.A.) educated Chairman of the St. Louis Cardinals, stated “we set out way back in '96 to be a consistent contender and we continue to have that goal. It's one of the reasons we put so much emphasis on building the farm system and building our scouting” (Hummel, 2013, para. 8). Hence, the (St. Louis) Cardinals rely on excellent scouting as part of the recruiting process. They also focus on training and, relative to their competition, are well known to more rapidly develop recruits into talented professionals at the highest level (Saxon, 2016). While the Cardinals had one of the more poorly performing HCDP during the years of our study, after great commitment to their farm system, they were recently ranked as high as third (Wells, 2013). If this strategy is implemented successfully, often with a balance of making and buying, capitalizing on both capabilities and cost reductions, small-market teams can be as competitive as large-market teams. Six of eighteen teams that competed in the World Series from 2003 to 2011 were small-market teams (e.g., consider the small-market Tampa Bay Rays of 2008 with a payroll of only \$43 M, *USA Today*, 2013). Hence, the developmental system within MLB provides an appropriate context to examine how HCDP help organizations obtain competitive advantages associated with positive financial outcomes.

### 3. Theory and hypotheses

#### 3.1. Competitive advantage and operational performance

For organizational capabilities, we consider research and theory from RBV in addition to classical organizational capabilities literature (e.g., Dierickx & Cool, 1989; Grant, 1996; Makadok, 2001). These perspectives (Barney, 1991; Dierickx & Cool, 1989; Grant, 1996; Makadok, 2001; Wernerfelt, 1984) are particularly helpful to explain aspects of sourcing related to resources (including knowledge), capabilities, core competencies, relatedness (Madhok, 1996; Markides & Williamson, 1996), and the potential for synergy (Barney, 1991; Penrose, 1959; Wernerfelt, 1984). Here, vertical integration of human capital development synergistically enhances organizational resources. Such potential is derived from the VRINS framework that determines the overall strength of a resource based on its Value, Rareness, Imitability, and Non-substitutability (Barney, 1991; Wernerfelt, 1989). Moreover, firms that focus on having effective HCDP are more likely to create strategic human capital resources (HCR), which represent unit level human capital that provides a source of competitive advantage to an organization (Ployhart, Nyberg, Reilly, & Maltarich, 2014).

However, RBV is criticized for not explaining how superior resources lead to positive performance (e.g., Priem & Butler, 2001) as well as not being the right fit for HRM theory (Kaufman, 2015). We adopt the RBV perspective largely to explain how and why human capital is a VRINS resource. Furthermore, we believe HCDP closely tie to an organization's capabilities and that better performing HCDP may provide competitive advantage. By exploring the positive outcomes of HCDP we help dispel common criticisms of RBV. Namely, in response to Priem and Butler (2001), we want to show that better performing HCDP improve operational performance. Second, and related, we dispute the notion that performance and resources are tautological under the RBV lens. By examining the impact of HCDP on future performance and selecting a context in which HCDP across organizations are relatively equal, our research design makes it illogical to argue that higher performance leads to better HCDP. Hence high quality HCDP are an

organizational capability that provide competitive advantage, which leads to other positive performance outcomes. Third, we provide a context in which HCDP and RBV are an excellent fit for theorizing within strategic HRM because HCDP represent a cornerstone of HRM (i.e., training and development).

Performance is arguably the most important construct in strategic management research (Richard, Devinney, Yip, & Johnson, 2009). Over the years, management scholars have investigated the determinants and contingencies of organizational performance to explain performance heterogeneity among structurally similar organizations (Combs, Crook, & Shook, 2005). This research assumes organizational strategy impacts organizational performance (Lubatkin & Shrieves, 1986) and views human capital as fundamental to organizational performance (Castanias & Helfat, 2001; Farjoun, 2002; Gambardella, Panico, & Valentini, 2013; Huselid, Jackson, & Schuler, 1997; Wright & McMahan, 1992). In this extensive literature, performance has been measured in many ways (e.g., accounting measures, finance measures, operational measures, power, legitimacy, corporate social responsibility, and so forth), but we examine the impact of competitive advantage (i.e., HCDP) on operational performance and how operational performance affects financial performance.

Competitive advantage has been measured in a variety of ways. Popo and Weigelt (2000, p. 586) measured it as “the accumulated skill set of free agents” (e.g., a combination of runs created, all-star votes and so forth). Researchers have also used survey questions about low cost, differentiation, and switching costs (Kearns & Lederer, 2003; Porter, 1980), a reduction of defects in semiconductor manufacturing (Hatch & Dyer, 2004), and total quality management scales (Douglas & Judge, 2001). Still, competitive advantage is often poorly defined and operationalized (Ma, 2000). As in this study, others suggest that competitive advantage comes from organizational competencies, is part of an organization's strategy, and leads to other performance outcomes (Hofer & Schendel, 1978; Ma, 2000).

According to RBV, firms may choose two approaches toward acquiring valuable resources (1) purchase resources on the open market or, (2) create a system (i.e., an organizational capability) to improve the potential of current resources (Makadok, 2001). While these strategies can substitute for one another, the capability building approach has two distinct advantages. First, firms on average are unlikely to consistently purchase resources on the open market that contain a high level of surplus value, as most of the value will erode during the competitive bidding process (Barney, 1986). Second, organizational capabilities are deeply embedded within the complexities and ambiguities of organizations, making them extremely difficult for competitors to imitate or substitute (Dierickx & Cool, 1989; Teece, Pisano, & Shuen, 1997). Therefore, one should expect organizations possessing a highly rated HCDP to achieve a competitive advantage by enhancing and maximizing this form of unit level HCR. Given that past research indicates that HCR positively relate to operational performance (Crook, Todd, Combs, Woehr, & Ketchen, 2011), better HCDP should provide organizations with competitive advantage to enhance operational performance.

It is assumed that organizations may place different levels of emphasis on their HCDP to achieve competitive advantage. Accordingly, MLB franchises may decide to improve their stock of human capital by emphasizing their HCDP. In doing so, an organization's strategy toward HCDP should positively impact its competitive position relative to rivals that do not put forth the effort or have the skills necessary to enhance this multi-level training platform. We argue these efforts produce better HCDP and thus superior talent in an organizations' labor pool. In any labor intense industry, the quality and quantity of an organization's labor pool may serve as a much needed and valuable competitive advantage. Pertaining to operational performance, qualities derived from superior HCDP are more likely to create efficiencies and improve performance opportunities relative to less trained competitors. Further, because “operational performance measures capture the performance of

**Table 1**  
Variables and sources.

Variables	Definition	Source
Team wins	The number of wins the team has during the 162 game regular season.	ESPN
Revenue	Annual team revenue (in millions of dollars).	Forbes
Average attendance	The team's average attendance for home games.	ESPN
Developmental ranking	An annual ranking of each team's developmental program (1 – 30), listing the best developmental program as 1 and the worst as 30.	Baseball America
Market value	The enterprise value of a team, its stadium economics, brand, relationships, ancillary businesses, and revenue sharing.	Forbes
Team salary	Annual aggregate compensation paid to all players on the team's 25-man professional roster (in millions of dollars).	USA Today
Small-market size	A dichotomous variable: 1 for teams that are in the 15 smallest markets. <i>Large-Market Size</i> teams are the excluded group.	Bleacher Report
Ownership change	A dichotomous variable: 1 for the initial three years a team has a new owner, 0 for all other years.	Bleacher Report
GM change	A dichotomous variable: 1 for the initial three years a team has a new general manager, 0 for all other years.	Baseball Reference

specific value chain activities within the firm" (Crook et al., 2011: 446) and given our measure of operational performance accounts for the value of human capital, we believe better HCDP represent an organizational capability that is a competitive advantage for higher ranked programs. Thus competitive advantage will significantly improve varying microfoundational elements of strategy, such as employee productivity, quality of product (in terms of player ability), on-time delivery of performance, and flexibly to adapt, all of which make up a firm's operational performance. Hence we propose the following hypothesis:

**Hypothesis 1.** Better performing HCDP lead to greater operational performance.

### 3.2. Competitive advantage, operational performance, and financial performance

The theoretical relationship between competitive advantage and financial performance has been addressed in strategic management (e.g., Barney, 1991; Porter, 1985), but the construct of competitive advantage is less clear empirically (Ma, 2000). Competitive advantage comes in many forms, including shedding costs and creating synergies. Among the sources of competitive advantage are knowledge (Grant, 1996), social capital (Dyer & Singh, 1998), and human resource systems (Lado & Wilson, 1994), to name a few. Scholars often use competitive advantage to discuss their views of strategy, suggesting "this" or "that" leads to competitive advantages and, thus better performance. In contrast, we contend that greater competitive advantage leads to positive financial outcomes such as revenue or sales<sup>1</sup> through the mediation of operational performance. We then suggest that firms receive positive financial outcomes when HCDP produce talented employees who more effectively perform the core operations of the firm.

We account for a distinct difference in competitive advantages between organizations, positing that organizations must have a HCDP strategy to gain competitive advantage before they can enhance operational performance. Because operational performance directly taps into the human capital value chain, and both HCDP as well as our definition of operational performance embody microfoundations of strategy, they should improve financial performance in a labor intensive industry. Thus we expect better HCDP to positively affect financial performance through operational performance and hypothesize the following:

**Hypothesis 2a.** Operational Performance will mediate the relationship between HCDP and revenue, yielding a positive indirect relationship.

**Hypothesis 2b.** Operational performance will mediate the relationship between HCDP and sales, yielding a positive indirect relationship.

<sup>1</sup> Revenue is total amount of money each team receives while sales is operationalized as number of tickets sold (i.e., fan attendance).

## 4. Research design

### 4.1. Sample and variables

Archival data were collected for 30 Major League Baseball organizations spanning 2003–2011. Data used in the analyses were collected from *Baseball Almanac*, *Forbes*, and *USA Today*, among other sources (see Table 2 for a complete list of sources matched with variables). The sample provides an adequate snapshot of league roster composition. By ending in 2011 the data avoid complications created by rule changes in 2012, which impacted the amateur draft process (Baseball America, 2012). Although other changes occurred during these years,<sup>2</sup> the duration represents a relatively stable time period for analysis. Each professional organization has 25 members on its roster, setting aside certain contingencies for injury and late season roster expansion.

#### 4.1.1. Independent variable

*Developmental Ranking* is measured by ranking organizations' developmental programs, a historically well-studied labor market also known as the minor leagues and farm system (Rottenberg, 1956). These rankings assess the stock of talent in an organization's developmental system and provide an indirect assessment of an organization's ability to scout and develop talent. Avoiding tautology, a developmental system's ranking is unrelated to how well previous players have done on the professional roster. *Developmental Ranking* represents HCDP and is a proxy for competitive advantage. Each variable is described in Table 1.

#### 4.1.2. Dependent variables

*Team Wins* is an endogenous variable in the model representing operational performance. *Team Wins* is the number of games a team wins in the 162 game regular season. Using *Team Wins* for the season rather than the post-season outcome is appropriate because organizational capabilities account for a low percentage of post-season success (Lewis, Lock, & Sexton, 2009). *Revenue* and *Average Attendance* measure financial performance. *Revenue* is a team's annual revenue and is comprised of items such as sponsorships, real estate, ticket sales, and concessions (Forbes, 2013; Schwartz, 2013). *Average Attendance* at home games captures ticket sales and is commonly studied in sports research (e.g., Baade & Tiehen, 1990). The time period used for this study provides relative consistency for attendance, excluding the strike from 1994 to 1995 among other things (Nesbit & King-Adzima, 2012).<sup>3</sup>

#### 4.1.3. Control variables

Control variables included in the analyses were chosen selectively and conservatively to avoid ambiguous or less meaningful controls that

<sup>2</sup> In 2008 MLB added limited instant replay (Baseball Almanac, 2013).

<sup>3</sup> Other attendance drivers include events such as the 1998 McGuire-Sosa homerun race, Cal Ripken Jr.'s consecutive games record, and the onset of fantasy baseball leagues (Nesbit & King-Adzima, 2012).

**Table 2**

Average descriptive statistics by organization from 2003 to 2011.

Teams	Developmental ranking (two-year lag) (rank)	Mean wins (rank)	Mean revenue in millions (rank)	Average attendance (rank)
Angels	10.6 (5)	90 (4)	189 (7)	34,699 (9)
Astros	20.9 (28)	79.4 (18)	179 (12)	31,908 (10)
Athletics	15.8 (14)	83.2 (11)	144 (26)	26,381 (26)
Blue Jays	17.1 (20)	81.1 (14)	150 (25)	26,644 (23)
Braves	6.6 (1)	87.6 (6)	183 (9)	31,224 (12)
Brewers	13.2 (9)	79.7 (17)	152 (23)	31,101 (13)
Cardinals	23 (29)	89.3 (5)	184 (8)	36,043 (4)
Cubs	11.2 (6)	81.4 (13)	210 (4)	36,816 (3)
Diamondbacks	16.6 (17)	76.6 (25)	163 (19)	29,984 (15)
Dodgers	12 (8)	84.4 (9)	209 (5)	38,139 (2)
Expos-Nationals	23 (29)	71.3 (27)	160 (20)	26,567 (25)
Giants	16.9 (19)	83.4 (10)	183 (9)	35,994 (5)
Indians	11.7 (7)	78.9 (19)	164 (18)	26,074 (27)
Mariners	13.9 (12)	73.9 (26)	183 (9)	29,841 (16)
Marlins	10.3 (4)	81 (15)	135 (29)	24,530 (28)
Mets	19.4 (23)	80 (16)	213 (3)	34,962 (7)
Orioles	20.2 (26)	69.9 (28)	165 (17)	28,208 (22)
Padres	20.4 (27)	78.8 (20)	157 (21)	31,281 (11)
Phillies	16.4 (16)	90.9 (3)	196 (6)	34,961 (8)
Pirates	18.9 (22)	67.4 (29)	138 (28)	26,605 (24)
Rangers	13.4 (10)	82.9 (12)	170 (14)	29,119 (18)
Rays	7.2 (2)	77.2 (23)	141 (27)	23,549 (30)
Red Sox	17.2 (21)	93.2 (2)	232 (2)	35,721 (6)
Reds	16.6 (17)	76.9 (24)	153 (22)	28,855 (19)
Rockies	14 (13)	77.4 (22)	170 (14)	31,008 (14)
Royals	19.7 (24)	67.3 (30)	135 (29)	24,179 (29)
Tigers	20.1 (25)	78.3 (21)	166 (16)	29,143 (17)
Twins	9.4 (3)	85.8 (7)	151 (24)	28,774 (20)
White Sox	15.8 (14)	85 (8)	174 (13)	28,461 (21)
Yankees	13.6 (11)	96.9 (1)	343 (1)	42,327 (1)
Total averages	15.5	81	177	30,770

might confound interpretations of findings (Carlson & Wu, 2011). *Market Value* is the enterprise value of a team, its stadium economics, brand, relationships, ancillary businesses, and revenue sharing. *Market Value* may reflect a team's ability to spend more to enhance developmental capabilities (e.g., enhanced facilities). Likewise, *Small-Market Size*, a dichotomous variable representing 15 of the 30 teams that had lower net local revenues, reflects the size of the media market and population and accounts for the fact that small-market teams receive a form of stipend generated from the 15 large-market teams. Although some studies show *Small-Market Size* does not impact wins, it does impact revenue (e.g., Gustafson & Hadley, 2007). The market size measure was selected from *Bleacher Report*, a reputable source for sports statistics in business research (e.g., Harrington, 2014). Next, *Team Salary* is included as a proxy for roster quality, which should impact performance outcomes. *Team Salary* is an aggregate of all players' salaries on the 25-player roster for each season. Additionally, *Ownership Change* and *General Manager Change* are included to account for possible effects of new top management on organizational decisions related to the HCDP since research suggests these key management figures impact roster composition based on their preferences, decision making, and networks (Hersch & Pelkowski, 2012; Rosentraub, 2000). *Ownership Change* and *General Manager Change* account for leadership change for one year after a change occurs to allow time for new strategies to develop and for major roster changes to come to fruition.

#### 4.2. Descriptive statistics: MLB, 2003–2011

As shown in Table 2, teams varied in competitive advantage through HCDP (i.e., *Developmental Ranking*). Teams like the Atlanta Braves stood out as having highly ranked player development systems, with an average ranking of 6.6. At the other end was the St. Louis Cardinals with a mean *Developmental Ranking* of 23. Although casual baseball fans may not be surprised by the Braves, the Cardinals are now (i.e., 2013 to 2017) often lauded for their outstanding minor league

system. This reflects a change in organizational strategy that occurred in the early 2000s (Goold, 2013). In general, it is difficult for a baseball fan to draw conclusions from the descriptive statistics alone given that some of the best performing teams during this time period, such as the New York Yankees and Boston Red Sox, had near average HCDP (i.e., 11th and 21st).

Not surprising, teams with better performance on the field (i.e., *Team Wins*) often led in average attendance. The top five winningest teams ranked in the top 10 for attendance. The New York Yankees had the most wins, highest average revenue, and highest average home attendance. Of course, *Average Attendance* reflects, in part, the number of seats each stadium holds. For example, the Boston Red Sox sell out almost (if not) every game yet their attendance ranks sixth due to the relatively small capacity of their stadium. The high demand coupled with expensive ticket prices made the Boston Red Sox second in *Revenue*.

Regarding the control variables, there were 17 ownership changes and 42 general manager changes. Approximately 82 million dollars was the average *Team Salary* during 2003–2011. However, the New York Yankees averaged 194.3 million dollars for player payroll, over 50 million dollars more than any other organization. Six other organizations averaged > 100 million dollars in annual payrolls, and eight operated with payrolls under 60 million dollars, demonstrating an obvious disparity in payroll spending.

Finally, descriptive statistics and correlations for all variables used in the analyses are provided in Table 3. There were no missing data and all variable means, standard deviations, minimum and maximum values passed inspection. The variance inflation factor (VIF) scores do not exceed five. Considering 10 is often the upper end of the recommended threshold, the test reveals no major problems with multicollinearity.

Table 3 shows correlations for variables used in the analyses of performance outcomes. Starting with relationships among the dependent variables in the analyses (*Team Wins*, *Revenue*, and *Average Attendance*), *Team Wins* is positively and significantly correlated with both

**Table 3**  
Descriptive statistics by organization.

	Mean	S.D.	1	2	3	4	5	6	7	8	9
1. Team wins	81	11.24	1.00								
2. Revenue +	176.64	51.54	0.36	1.00							
3. Average attendance	30,770	5190	0.50	0.67	1.00						
4. Developmental ranking (two-year lag)	15.50	8.67	−0.23	−0.04	−0.03	1.00					
5. Market value +	445.33	240.11	0.34	0.94	0.65	−0.02	1.00				
6. Small-market size	0.5	0.5	−0.31	−0.41	−0.45	−0.01	−0.41	1.00			
7. Team salary +	81.65	35.42	0.43	0.83	0.76	0.01	0.81	−0.54	1.00		
8. Ownership change (one-year lag)	0.06	0.24	0.02	0.02	0.01	0.01	0.01	−0.02	0.03	1.00	
9. GM change (one-year lag)	0.16	0.36	−0.07	−0.03	−0.05	0.06	−0.04	−0.02	−0.07	0.06	1.00

+ in millions of dollars (USD).

N = 270.

All correlations with an absolute value > 0.22 are significant at p < 0.05.

**Table 4**  
Results from the regression analyses.

Independent variables	(1)	(2)	(3)	(4)	(5)	(6)
	Team wins	Revenue		Ave attendance		
Market value +	0.00 (0.00)	0.00 (0.00)	0.20* (0.01)	0.20** (0.01)	1.77 (1.46)	1.05 (1.41)
Small-market size	−16.32 (8.80)	−8.56 (6.41)	51.82** (11.46)	51.67** (11.04)	−5866 (3979)	−4748.5 (3126.0)
Team salary +	−0.02 (0.04)	0.03 (0.04)	0.38* (0.07)	0.37** (0.07)	53.83** (9.91)	53.49** (8.94)
Ownership change (one-year lag)	−1.32 (1.97)	−1.43 (1.94)	−1.05 (2.61)	−1.39 (2.58)	−59.38 (454.89)	−219.68 (442.10)
GM change (one-year lag)	−0.23 (1.27)	−0.07 (1.25)	2.71 (2.11)	2.69 (2.09)	−211.86 (337.97)	−210.67 (320.03)
Developmental ranking (two-year lag)		−0.21** (0.07)	−0.20* (0.12)	−0.17 (0.12)	−34.83* (18.12)	−23.96 (17.01)
Team wins				0.17* (0.08)		74.38** (12.84)
Organization dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	270	270	270	270	270	270

Notes: columns 1–4 report coefficients and standard errors (in parentheses) from panel regressions.

+ in millions of dollars (USD).

\*\* p < 0.01.

\* p < 0.05.

^ p < 0.1.

*Revenue* and *Average Attendance*. Table 3 also shows that the relationships between the antecedent/control variables and the three dependent variables are very similar across the dependent variables. For example, *Team Salary* is positively and significantly correlated with *Team Wins*, *Revenue*, and *Average Attendance*; and *Small-Market Size* is negatively and significantly correlated with *Team Wins*, *Revenue*, and *Average Attendance*.

#### 4.3. Methodology

To test the theoretical model, a regression model including control variables is used to determine whether *Developmental Ranking* significantly impacts *Team Wins*. Next, mediation models are used to determine the impact of *Developmental Ranking* on *Revenue* and *Average Attendance* through *Team Wins*. Mediation occurs when the effect on a dependent variable (Y) is explained by an intervening variable (M), rather than directly by the independent variables (X) (Schurer-Lambert, 2013). To produce results, we use a simple mediation model (Bedeian, 2012) tested with panel data (Cole & Maxwell, 2003) and thus follow

the three-step procedure to test mediation, regressing the dependent variable on the predictor, regressing the mediator variable on the predictor, and regressing the dependent variable on both the mediator and the predictor (Baron & Kenny, 1986; Taylor, 2010). The three-stage regression analysis tests how *Developmental Ranking* directly impacts *Revenue* and *Average Attendance*, how *Developmental Ranking* impacts *Team Wins*, and finally how *Developmental Ranking* impacts *Revenue* and *Average Attendance* through *Team Wins*. If the direct effect is reduced yet still significant, there is partial mediation, and if the direct effect is no longer significant, there is full mediation (Hair, Black, Babin, & Anderson, 2010). Zhao, Lynch, and Chen's (2010) decision tree also clarifies the type of mediation present (i.e., complementary, competitive, indirect, direct, or none).

There are three remaining methodological issues. First, *Developmental Ranking* is lagged two years. Baseball statisticians typically find that top prospects experience success two to three years after their promotion to the majors (McKinney, 2011). Next, managerial changes are lagged one year based on the expectation that managerial strategies will have a much quicker, albeit not immediate, impact than *Developmental Ranking*. Second, there are issues to consider related to our data. The basic assumptions necessary for ordinary least squares (OLS) regression—normality, homoscedasticity, linearity, and an absence of correlated errors (Hair et al., 2010)—do not all hold for panel data, as the organizations are not independent of one another from year to year, therefore violating homoscedasticity and correlated errors assumptions.

Several estimation techniques are available for analyzing panel data, including fixed-effects models and random-effects models. Random effects models assume the specific effects of independent variables are uncorrelated (Torres-Reyna, 2014). Fixed-effects models explore the relationship between independent and dependent variables within an entity and are best used when the impact of variables that fluctuate over time are not caused by random variation. Because organizations do not vary in completely random ways from year to year, a fixed-effects model is more logical for this dataset. Furthermore, we include all teams and all levels rather than a sample of possible levels which conceptually supports the fixed-effects model. Nonetheless, to best determine which model to use, fixed or random effects, a Hausman test was performed. “It basically tests whether the unique errors are correlated with the regressors, the null hypothesis is they are not” (Torres-Reyna, 2014, p. 29). The Hausman test treats random effects as the null hypothesis and fixed effects as the alternative hypothesis. Since results for the Hausman test were significant, we estimate the models using fixed effects.

Two common options for estimating fixed effects models are Least Squares Dummy Variables (LSDV) and Panel Corrected Standard Errors (PCSE). We use PCSE because it corrects for serial autocorrelation and heteroskedasticity problems in the panel. The PCSE is a function available in STATA's data analysis software package (i.e., “xtpcse variables, corr(psar1) hetonly”). Essentially, the estimates of  $\beta$  will be

consistent but the standard errors will be inaccurate. Hence this function “takes into account the contemporaneous correlation of the errors (and perform heteroscedasticity)” (Beck & Katz, 1995, p. 638) by using the residuals to provide a consistent estimate and confirmed through Monte Carlo experiments (Beck & Katz, 1995), a common practice for running fixed effects models (see Garand, 2010).

## 5. Results

Results for the control variables are included in Model 1 (of Table 4). Although most control variables were expected to affect *Team Wins*, they had greater impacts on *Revenue* and *Average Attendance* as seen in Models 3–6. Next, *Hypothesis 1* predicted that better HCDP would lead to greater competitive advantage. This hypothesis is tested in Model 2, which includes *Developmental Ranking* along with the control variables as predictors of *Team Wins*. We find support for this hypothesis ( $-0.21$ ,  $p < 0.01$ ); teams win more games two years after *Developmental Ranking* increases (i.e., the *Developmental Ranking* number becomes smaller).

*Hypothesis 2a* (2b) predicted that *Team Wins* would lead to greater *Revenue* (*Average Attendance*). *Team Wins* is a significant predictor of *Revenue* ( $0.17$ ,  $p < 0.05$ ). Each additional win, increases *Revenue* by \$170,000. *Developmental Ranking* is also a significant predictor of *Revenue* ( $-0.20$ ,  $p < 0.10$ ). Because including the mediating effect leads to a more predictive model, we find evidence of a significant mediating effect (support for *Hypothesis 2a*). Next, we find that each additional win increases *Average Attendance* by  $\sim 74$  people. Again, the direct effect of *Developmental Ranking* significantly predicts *Average Attendance* ( $-34.83$ ,  $p < 0.10$ ), and *Team Wins* significantly predict *Average Attendance* ( $74.38$ ,  $p < 0.01$ ); thus, *Hypothesis 2b* is supported. Alternatively, if we hold the direct effects to more stringent *p* values (i.e.,  $0.05$ ), recent research suggests there are varying types and levels of mediation (Zhao et al., 2010). Because *Team Wins* has a significant impact on *Revenue* and *Average Attendance*, in accordance with Zhao et al. (2010), we can minimally conclude there is indirect-only mediation in support of hypotheses 2a and 2b.

## 6. Discussion and conclusion

A few fundamental gaps in the literature led to this research. First, we wanted to better understand how microfoundations in human capital may impact unit level outcomes. Given HCDP are an organizational capability and work as a proxy for an organization's competitive advantage for higher ranked HCDP, we predicted and found they have a positive impact on operational performance. Arguing for the potential benefits of HCDP, we also realized the MLB context could dispel previous criticisms in the RBV literature: that resources lead to performance, the tautological problem that in many cases performance leads to resources, and whether RBV is useful in strategic HRM. We demonstrated that VRINS resources such as HCDP lead to better performance and also showed that it is not performance leading to better HCDP (i.e., lagging HCDP by two years). Further, RBV was useful to explain why HCDP, a HRM based multi-stage training program, could positively impact organizational outcomes.

Next, much of the developed world has moved toward knowledge and service economies, so improving our understanding of human capital is necessary, particularly in terms of how organizations use capabilities to improve competitive advantages over rivals. This allows them to develop HCR through HCDP. And although all organizations may possess notable capabilities (HCDP), they produce competitive advantage only when they perform superior to rivals. Relatedly, as competitive advantage is fundamental to strategic management, learning more about how it impacts operational and financial performance is important to academicians and organizational decision makers.

Hence, this study endeavored to answer two fundamental questions:

“How do organizations' HCDP serve as a competitive advantage and affect operational performance?” and “Does operational performance mediate relationships between HCDP and financial outcomes?” Because these hypotheses were supported, this study advances research on HCDP by demonstrating the utility of applying microfoundations of strategy to examine the effects of HCDP on operational and financial performance. The empirical results indicate that better HCDP provide competitive advantage that positively affects operational performance, which in turn affects financial outcomes.

Finally, this study contributes to the strategic management literature by utilizing a context having clear metrics for competitive advantage (i.e., better ranked HCDP) and operational performance (i.e., *Team Wins*), two common concepts in strategic management that can be difficult to capture empirically. This allowed us to demonstrate how HCDP provide organizations an opportunity to gain a competitive advantage that impacts operational performance and ultimately leads to financial performance. Examining these impacts (both directly and indirectly) further establishes the importance of continued practical and scholarly attention to this stream of research. To the extent organizations can establish competitive advantage, operational performance is improved and financial outcomes will be superior to competitors. As competitive advantage remains fundamental to strategic management, more studies should empirically validate a difficult-to-operationalize construct.

There are also implications for managerial practice. Because HCDP improve organizational outcomes, organizations may want to focus heavily on multi-level training and development programs if they plan to vertically integrate talent throughout the organization. This might involve expanding the human resources department functions of training, development, recruiting, and so forth. Additionally, management may consider identifying how top employees were trained and then adjusting HCDP accordingly.

### 6.1. Limitations and future research

Sporting contexts are excellent when used for appropriate questions (Holcomb et al., 2009; Wolfe et al., 2005), but MLB still has a few limitations when generalizing to other contexts. First, smaller-market teams are awarded subsidies from larger-market teams in order to level the playing field. This is a unique arrangement not likely observed in other industries. Likewise, the extremely low threat of entry in this context differs from most industries. In some respects, MLB resembles industries that had, at one time or another, been highly regulated such as airlines, trucking, and telecommunications.

Despite these limitations, MLB addresses our questions about HCDP for several reasons. Unlike other major sports in the United States, MLB lacks a payroll cap which would restrict the amount of money teams can spend on human capital. This allows a wide disparity in payrolls among the 30 MLB teams and creates a dynamic similar to other business organizations which vary in size and spending. Additionally, the player development structure in MLB is absent from other sports in which players are drafted and immediately join the professional roster (e.g., NFL, NHL and NBA). In this way, a baseball team's developmental system is like those in many organizations where talent is developed through the ranks of the organization. Public accounting, law firms, and consulting firms operate in a similar fashion, often having tiers in which employees typically move up or out after a certain duration. In sum, for the questions examined in this study, MLB provides a context that generalizes fairly well to other organizations.

Future directions for studying HCR might focus on finding other ways human capital can produce a competitive advantage (Coff & Kryscynski, 2011) and positively affect operational and financial performance. In addition, future studies might continue to investigate the microfoundational relationship between talent and organizational outcomes. Researchers should examine whether teams mimic HCDP of other successful teams that have similar characteristics and, if

so, which characteristics organizations are most likely to imitate, perhaps leading to discoveries in institutional theory and isomorphism regarding organizations' strategic decisions. An investigation of league and division differences might also provide a setting to better understand how HCDP vary among strategic groups or clusters within an industry. In MLB, where teams compete more often with intra-division rivals, as with many industries, an organization's performance is dependent on the overall health of the industry and also on the strength of their direct and closest competitors within the industry (Rothaermel, 2013). Lastly, human resource scholars can utilize this context for research on employee recruiting as each MLB team has numerous recruiters and scouts working to identify talented personnel. Pursuing these suggestions for future research could further enhance understanding of the relationship between HCR and organizational performance.

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