

Running Head: COMPETITION TIME

North American Professional Sport: Exploring Competition Time and its Effect on Valuation,  
Revenue and Profitability

By Ryan Murray  
Supervisor: Dr. Norman O'Reilly  
Committee Member: Dr. Benoit Seguin  
Committee Member: Dr. John Nadeau

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### **Abstract**

This thesis examines if there is a relationship between competition time and team valuation, revenue and profitability in North American professional sport. The leagues examined were the major four in North America and include the National Basketball Association, Major League Baseball, the National Hockey League and the National Football League. Using the Balanced Scorecard (BSC) as a guide, appropriate literature of the four BSC categories was reviewed. The four categories of the BSC include Financial, Customer, Internal Business Processes and Learning and Growth. Conceptual models for team valuation, revenue and profitability were constructed using the BSC as a framework. In order to construct the three conceptual models 51 professional sport research variables were identified as useful to this framework. The data was collected over a ten-year period for the seasons 2003/2004-2012/2013. A series of statistical analyses were examined with regression analyses revealed three distinct models for the three dependent variables. It was found that competition time has a significant impact on all three dependent variables. The results from this study will help league executives in creating new strategies for revenue growth and other financial gains. Future research will work towards creating more competition time variables that will aid in determining the proper amount of competition time that needs to be played by each league to maximize league finances.

**Table of Contents**

List of Tables .....	5
List of Figures .....	6
Chapter 1 – Introduction .....	7
Chapter 2 – Professional Sport Background .....	9
Chapter 2 – Literature Review .....	12
i. Internal Business .....	12
ii. Consumers .....	15
iii. Financial .....	18
iv. Learning and Growth .....	20
Chapter 3 – Theory and Framework .....	21
Chapter 5 – Method .....	27
Chapter 5 – Results .....	44
i. Descriptive Statistics .....	44
ii. Correlation Analysis.....	46
iii. Factor Analysis .....	50
iv. Regression Analysis .....	51
Chapter 6 – Discussion and Conclusion .....	65
References .....	75
Appendices .....	87

### List of Tables

TABLE 1: Collective bargaining agreements for the NFL, NHL, NBA and MLB .....	10
TABLE 2: List of professional sport tiers with definitions and examples .....	13
TABLE 3: Total number of games per season, per team and total number of games per season for the entire league .....	19
TABLE 4: Television contracts of all four professional leagues .....	20
TABLE 5: Description of five potential considered for this study .....	23
TABLE 6: Description of six professional sport ratios developed from financial principles ....	42
TABLE 7: Descriptive statistics include the mean, standard deviation and variables description (n=1219) .....	44
TABLE 8: Univariate correlation analysis for the three dependent variables and competition time .....	48
TABLE 9: Results of the data reduction via a factor analysis .....	50
TABLE 10: Linear regression analysis for the three dependent variables valuation, revenue and profitability .....	52
TABLE 11: Description of interactions between categories in Figure 2 .....	54
TABLE 12: Description of interactions between categories in Figure 3 .....	58
TABLE 13: Description of interactions between categories in Figure 4 .....	63

**List of Figures**

FIGURE 1: Standard template of the Balanced Scorecard, developed by Kaplan and Norton (1996a) ..... 25

FIGURE 2: Model of the conceptual framework for team valuation ..... 53

FIGURE 3: Model of the conceptual framework for team revenue ..... 58

FIGURE 4: Model of the conceptual framework for team profitability ..... 62

### **Introduction**

Of the four major professional sport leagues in North America (i.e., the National Hockey League (NHL), the National Basketball Association (NBA), Major League Baseball (MLB), and the National Football League (NFL), the NFL has grown to be the largest in terms of franchise value, league revenue and league profitability (Ozanian, 2012). Despite generating the most revenue, the NFL plays the least number of games compared to the other major professional sport leagues in North America. Competition time is defined as the number of regular season home games played by individual teams in the four major leagues in North American professional sport. It cannot yet be determined if the type of sport plays a factor in this paradox or if the degree of profitability is due to the exclusivity of the NFL. For example, Major League Baseball (MLB) is the next highest revenue-generating league, yet teams play eight times as many games as the NFL, making it far less exclusive (Plunkett, 2012).

Professional sports have been an area studied in sport management research for some time, although it is understudied when compared to the National Collegiate Athletic Association (NCAA) or amateur sport. Specifically, professional sport has been studied as it relates to branding (Frederick & Patil, 2010), sponsorship (Lee & Ross, 2012) and finance (Matheson, 2009). However, professional sport research is sometimes limited due to shortage of primary data and transparency from professional teams.

Professional sport has continued to grow despite a lack of change in the basic structure and format of rules and operation. Specifically, there has been no significant change in the predetermined number of games to be played by each franchise in each league during a given season. While there have been minor changes in the number of games played throughout each league's history, the changes have resulted in a difference of one or two games. The NFL has

continued to prosper and maintain healthy financial profits for each franchise while still continuing to play the same number of games. However, the other three professional leagues have struggled to maintain financial continuity between the highest valued teams and the lowest valued teams within their leagues. While there are very few MLB teams who lose money each year, there are a number of teams which have very small profits compared to other teams in the MLB. There are a large number of teams in the NHL and NBA with net deficits. With this knowledge, the NBA, NHL and MLB might consider a reduction in the number of regular season games in order to increase franchise value, revenue and profitability.

The Balanced Scorecard (BSC) will be used as a guiding framework for this study. This framework is common practice in industry as a tool to measure the efficiency of a business as well as way to set and measure goals (Kaplan & Norton, 1996b). What separates the BSC from other management frameworks is its holistic approach. Other frameworks focus on one aspect of a business or organization whereas the BSC examines four different parts, which all helps to shape the entire organization (Kaplan & Norton, 1996b). The four areas that BSC examines are Financial, Consumer, Internal Business and Learning and Growth (Kaplan & Norton, 1996a). The empirical nature of this project is what lead to the decision to use the BSC and as such this framework will help organize the literature review and subsequent thought.

Accordingly, the purpose of this study is to determine if a change in competition time affects franchise value, league revenue and profitability for the four major North American professional sport leagues. There will be one main question driving this studying. The main research question asks if there is a relationship between competition time, valuation, revenue and profitability in professional sport. This relationship will be explored through a series of Mini-

Studies and statistical analysis. The six Mini-Studies used to show how competition time impacts each league are outlined below.

- Study 1 – The NFL: Number One League in North America
- Study 2 – Game Importance in the NFL
- Study 3 – Impact of Lockouts on the NHL and NBA
- Study 4 – MLB: The Hunt for October
- Study 5 – The Premier League: Examining a League with No Playoffs
- Study 6 – Ratio Development

The Mini-Studies will be completed using a mix of secondary qualitative research and correlation analysis. Finally, a statistical analysis of a major professional sport league database will be used to create a model that focuses on the effect of competition time for the three dependent variables; franchise valuation, revenue and profitability. Overall, the results of the study on the relationship between competition time valuation, revenue and profitability in professional sport will attempt to add an empirical understanding to a relatively untouched area of sport research. The research will also provide practical implications to executives and league commissioners in professional sport on how to optimize both league and team financials.

### **Background: Professional Sport**

Professional sport in North America is led by the four major leagues, NFL, NHL, NBA, and MLB. While each league is successful in its own right they each differ in the way they operate. NFL teams (n=32) are located entirely in the United States (US). The NBA and MLB each have one Canadian team with the remaining 29 teams are located in the US. The NHL is unique in that seven teams are located in Canada with the remaining 23 teams located in the US. Since the majority of professional sport teams are located in the United States, all leagues

operate in US currency when paying players and other league fees. Canadian franchises in each league must also follow this rule despite the value differences between the Canadian and US dollar.

Within each league, there are two parties who are deeply invested in the well-being of the league, the owners and the players. As such, each party has its own representation within the league. The players' association elects a group of players to a board of directors who then represent all of the players within the league (Kobritz & Levin, 2011). Since players are busy competing, one person is nominated to run the day-to-day operations of the players' association (Korbitz & Levine, 2011). Representing the owners is a Board of Governors who elects a commissioner to run the day-to-day operations of the league (Foster, Greyser, & Walsh, 2006). To ensure the owners and the players abide by the same rules, both parties agree to a collective bargaining agreement (CBA).

The CBA is a very important document in professional sport, such that it has been the primary cause for recent work stoppages in professional sport (Baumann, 2012). This document determines how much of the revenue, among other things, is given to the players and the owners (Rascher & DeSchriver, 2012). Each league has its own CBA, with different provisions in each agreement. Table 1 contains highlights of the CBA for each of the four professional sport leagues.

Table 1.

*Collective bargaining agreements for the NFL, NHL, NBA and MLB*

League	CBA Agreement Start	CBA Length	CBA Description
NFL	2011	10 Years	<ul style="list-style-type: none"> <li>• Players receive 55% of national media revenue, 45% of NFL ventures revenue, and 40% of local revenue</li> <li>• Salary cap increased, salary floor reintroduced in 2013</li> </ul>
NHL	2013	10 Years	<ul style="list-style-type: none"> <li>• League revenue is distributed 50-50 between players and owners</li> <li>• Fines to players and salary lost to</li> </ul>

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NBA	2011	10 Years (Opt out after 7 Years)	<ul style="list-style-type: none"> <li>• suspension go into league-wide player retirement fund</li> <li>• League salary cap increases as a percentage of league-wide revenue</li> <li>• Players receive 49%-51% of league-wide revenue</li> <li>• Luxury tax, teams pay incremental tax for every \$5 million they are over the limit (e.g., \$1.50 paid for every dollar over)</li> </ul>
MLB	2011	5 Years	<ul style="list-style-type: none"> <li>• New revenue sharing system implanted</li> <li>• All teams receive revenue sharing until 2016. After this the top 15 teams in terms of revenue will no longer receive any part of the revenue sharing</li> <li>• Luxury tax threshold increase to \$189 million</li> <li>• Luxury tax fine is 17.5% for first offence, 30% for second, 40% third and 50% for the fourth offence</li> </ul>

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League wide restrictions can also affect competitive balance in professional sports (Kwon & Armstrong, 2004); some of the restrictions are listed in Table 1. Salary caps and revenue sharing are the main drivers of competitive balance in leagues. Restricting the amount spent on salaries can help bridge the gap of high spending teams and low spending teams (O'Reilly, Kaplan, Rahinel & Nadeau, 2008). Salary, however, caps differ between leagues. For example, the NHL has both a cap ceiling and cap floor, which means that no team can spend above the ceiling and every team must spend at least the minimum floor amount. On the other hand, the MLB has a luxury tax limit to help with competitive balance. Teams who spend above the luxury tax limit are subject to pay into a fund, which is then distributed to other teams in the league. The fund shared by every team in the league is known as revenue sharing. According to Berri (2012), teams with lower revenues can share the profits of large revenue generating teams and therefore increase spending on players. By creating more opportunities for competitive games, leagues increase the chance of having more important games throughout the season (O'Reilly, Nadeau, & Kaplan, 2011).

Regardless of the differences in league structures, they have all found a formula that has generated success. Despite the successes of each league, there is room for improvement especially when it comes to individual team revenue.

### **Literature Review**

As the Balanced Scorecard (BSC) will be the guiding framework of this study, the literature review has been organized accordingly. The four sections of the BSC, which are used to determine the effectiveness of a business, include internal business, consumers, financial, and learning and growth. Organizing the literature review in such a manner will help demonstrate why the BSC is an important guiding framework.

### **Internal Business Aspects of Professional Sport**

Professional sport has grown to be the 11<sup>th</sup> largest market category in terms of financial size in North America (Levin & McDonald, 2009). Yearly revenue from sport has risen to \$47.14 billion with an annual growth rate of 9% (Hambrecht, Hambrecht, Morrissey, & Black, 2012). In North America, the most successful sport league in terms of revenue and attendance is the NFL, followed by MLB, the NBA, and the NHL (Brown, Rascher, Nagel, & McEvoy, 2010). Each league is a not-for-profit enterprise, however, each franchise within the league is a for-profit organization where one person or a group of people owns the franchise. There are varying types of ownership, which accounts for the many different styles of team management. For example, Jerry Jones, owner of the Dallas Cowboys, is one of the most involved individuals in sport as he assumes the role of the team's general manager as well as the team owner. Other teams may elect to hire outside management to run the day-to-day operations of the team. In any case, teams are able to run their teams as they see fit as long as they follow the rules set out by each league. One individual from each team is elected to sit on the Board of Governors, which is

responsible for the entire ruling and governing of each league. For each league, the Board of Governors elects a commissioner, who is responsible for running the daily operations of the league. As such, the commissioner is seen as the face of the league, dealing with all issues and reporting back to the Board of Governors.

To understand the structure of the major professional sport leagues in North America, it is important to examine the five tiers of professional sport in North America as proposed by O’Reilly and Séguin (2009). The tiers are structured so that Tier One is made up of the largest leagues in North America and Tier Five is made up of annual one-off events. Table 2 displays these leagues from top to bottom, showing how each league ranks in North America.

Table 2.

*List of professional sport tiers with definitions and examples*

Tier	Definition	Examples
One	Top four North American professional leagues	NFL, NHL, NBA, MLB
Two	High level of sport in Canada and North America, but not the world	CFL, AHL
Three	Team-based women’s professional leagues and developing sport leagues	WNBA, MLS
Four	Multi-event sport competition	PGA, ATP, WTA
Five	Sport entertainment events	World Series of Sport, X-Games

Table 2 illustrates how there is a hierarchy of professional sport leagues. Tier One leagues were chosen for this study because they have the most publicly available data and generate the most revenue in the North American sport.

During the regular season, the NFL provides an excellent example of creating high demand over a scarce product relative to the other professional leagues in North America. The NFL schedules the least amount of regular season games, making every game important to fans. In contrast, the MLB schedules the most regular season games, which provides fans with abundant opportunities to watch and attend games.

When discussing the possibility of reducing the number of regular season games played, it is important to examine how a franchise's brand may be affected. A brand is a powerful statement that separates one company from another. When the brand name or logo adds any value to a product, it is known as brand equity (Aaker, 1991). Applying this concept to professional sport, brand equity is increased because of the added value fans create with attachments to names and logos (Gladden & Milne, 1999). Common definitions of brand equity in sport are based off of financial data. This method allows brand equity to be quantified, but forgets a key component in sport, the fans. As a result, Aaker (1991) and Keller (1993) examined the effects of consumers on brand equity.

Consumer-based brand equity states that consumers are familiar with a brand and have strong and unique associations with it (Keller, 1993). The result of strong and unique associations between the brand and fans is what increases brand equity in sport. This model can be broken down into two parts, the first involving the consumer being aware of a brand and the second involving a positive image of the brand (Keller, 1993). This model helps showcase how consumers offer unique identities and personalities depending on the sport in question. For example, basketball fans have a different image of baseball than actual baseball fans. The resulting image is what increases or decreases brand equity in sports.

Professional sport complicates consumer-based brand equity because of the varying performances. Also, because of multiple viewing platforms, sport can have both positive and negative images. Thus, brand equity can change depending if a fan witnessed a game in a stadium or if a fan read about a game in a newspaper. The unpredictability of sport creates change in the brand's perceptions (Gladden & Funk, 2002); therefore, it is difficult to control its perception to consumers. Furthermore, sport may be experienced in different capacities, such as

live or in front of the television, making it unique and emotional for consumers. Lastly, intangible benefits of sport make it difficult to measure the amount of brand equity experienced by a professional sport team.

### **Consumers of Professional Sport**

Sport consumers are vital to professional sport. Without fan participation, professional sport organizations would not survive. Sports consumers are unique in a sense that they tend to wear their heart on their sleeve and flaunt their favourite team proudly (Kwon & Armstrong, 2004). Professional sport teams recognize this and go to great lengths to satisfy these consumers. Sport consumers can be divided into two groups: sport fans and non-fans (Tajfel & Turner, 1985). Sport fans are avid consumers of sport, whereas non-fans are considered to not be avid fans of sport (Milne & McDonald, 1999). Each game played provides sport fans an opportunity to support their team. Therefore, the number of games played in each league each year directly affects sport consumers. O'Reilly and Séguin (2009) divide sports fans into four distinguishable groups: active thrill seekers, EZ chair quarterbacks, patriotic traditionalists, and cultured individualists (O'Reilly & Séguin, 2009).

Professional sport teams' ability to connect with their fans and keep them interested will increase revenue and maintain league stability (Park, Mahony, & Kim, 2011). It is especially important to connect with active thrill seekers and EZ chair quarterbacks; the two main sport consumer groups (O'Reilly & Séguin, 2009). As technology evolves, outlets to interact with sport consumers need to evolve. For instance, team websites have begun offering interactive features that allow fans to become more involved with the team (O'Cass & Carlson, 2010). Also, online stores for professional teams are now offering hundreds of options for their fans. Products range from team jerseys, to garbage cans, to bikinis (NHL, 2013). Online marketing towards

sport consumers will also be important to acquire and maintain fan interest. Interactive team websites and monitored sport blogs provide various opportunities for sport consumers to get inside information not known to the common fan.

Sport consumers purchasing intentions have increased 18% between 2004 and 2009 (Euromointor, 2011). In total, sport consumers have spent \$136.8 billion per annum on sports and sport related merchandise (Euromonitor, 2011). Furthermore, professional sport competition is becoming extremely stiff, because of advancement in league rules to make competition fair for all teams (Gladden & Funk, 2004). As such, professional teams are investing more money in retaining sport consumers (Gladden & Funk, 2004). Long standing professional teams have an easier time appealing to sport consumers due to infamous histories (Nadeau & O'Reilly, 2006). Commonly, new or relocated sport franchises have a much more difficult time with sport consumers because of a lack of fan base (Frederick & Patil, 2010). Unique sport marketing endeavors may need to be explored if teams want to appeal to new sport consumers and support existing sport consumers.

A distinguishing characteristic about professional sport fans is their unique devotion to their team (Gladden & Milne, 1999). They are devoted to their favourite team through the highs, but abandon their favourite team during the lows. Sport literature has categorized fans as BIRGing (basking in reflected glory) and CORFing (cutting off reflected failure) (O'Reilly & Séguin, 2009). The ability of fans to identify with certain teams is what compels them to return. Identification is the process of defining oneself and identifying how others think about the person (Tajfel & Turner, 1985). Sport identification has been adapted from this original definition and used extensively in the literature. Milne and McDonald (1999) define sport identification as personal commitments and emotional involvement with a specific sport organization. For the

purpose of this study, the Milne and McDonald (2009) definition will be used when considering sport identification.

When discussing consumers of any type, it is important to note that a multidisciplinary approach is often taken (Tajifel & Turner, 1985). Consumers must make a psychological choice when deciding to purchase merchandise or attend a game (Kwon & Armstrong, 2004). In order for a fan to identify with a sports team, they must first commit to the notion of professional sport, which is a global business interested in maximizing revenue (Chelladurai, 2001). Commitment can be broken down into two categories, personal and behavioral (Meyer & Allen, 1991). Personal commitment involves a strong dedication to carry out a decision (Johnson, 1973). For instance, a fan must be committed to attending a MLB game even if the game has no post-season implications. Behavioral commitment involves the continuation of an action even if one is not personally committed (Johnson, 1973). An example of behavioral commitment is when fans continue to watch playoff action even if their team is eliminated. Literature has noted that behavioral commitment is not common in sport consumers because of sport team attachments (Kwon & Armstrong, 2004).

Continuing with the psychological dynamic of sport fans, Hirt, Zillman, Erickson, and Kennedy (1992) report that the mood and emotional state of highly identified sport fans is affected by team performance. When teams are doing well, moods and emotions were positively impacted and when teams were doing poorly, moods and emotions were negatively impacted (Hirt et al., 1992). There is a lack of research regarding the time in which fans begin to feel negative impacts of poor performances. In the case of the NFL, where every game matters, is the impact felt after the first game or during the second half of the season (O'Reilly et al., 2011)? Conversely, throughout the course of the 162 game season, MLB fans may begin to experience

negative emotions much later in the season when the pressure of post-season play becomes apparent. Consequently, fans may stop spending money on their teams, even for a brief period of time (Carlson, Donovan, & Cumiskey, 2009).

### **Financial Impacts of Professional Sport**

Product availability is important to sport fans and sport consumers (Turner, 2007). In professional sport, it can be categorized into multiple outlets such as television, radio, and live game attendance (Nadeau & O'Reilly, 2006). The product of professional sport is like any other product and is based off the supply and demand theory (Turner, 2007). Simply, when there is scarcity in the market, the product increases the demand for itself. It could be argued that professional sport lockouts create a positive demand because of the scarcity of the product. However, when there are too many products in a similar market, then demand of the product decreases.

The demand of certain sports has raised concerns in recent years for the four major sport leagues. A number of professional sport leagues have risen to prominence and challenged the major four leagues. Major League Soccer is an example of a new league that has now begun competing with teams in a similar market. Large cities now play host to multiple professional teams, which decreases the demand of professional sport in the same market. For instance, New York is the home to ten professional teams, many competing on the same night. This puts professional sport leagues in direct competition with one another.

The number of regular season games played by a league for an entire season is displayed in Table 3. The data shows that there are nearly ten times as many games played in MLB compared to the NFL. This then shows that there are ten times as many opportunities for fans to take in a MLB game, thus reducing the leagues exclusivity.

Table 3.

*Total number of games per season, per team and total number of games per season for the entire league*

League	Regular Season Games per Team	Regular Season Games Per League
NFL	16	256
NHL	82	1,230
NBA	82	1,230
MLB	162	2,430

Large NFL stadiums accommodate more fans, which helps manage demand among consumers. Tailgate parties before games also enhance experience in the NFL. Other sport leagues have tried to emulate this fan experience, however, without new solutions, other leagues have struggled to keep pace and attract new fans.

When looking at the four major professional sport leagues, they all generate revenue in a similar fashion (O'Reilly & Nadeau, 2006). Whether it is from merchandise sales, parking, concessions, gate receipts, or broadcast deals (O'Reilly & Nadeau, 2006), revenue has continued to rise in recent years.

As mentioned earlier, fans are the primary driver of revenue generation. Without fans, leagues would not be able to operate. Therefore, by creating positive experiences at the stadium and during competition, leagues and teams can generate substantial revenue. Recently, broadcast deals have become a large source of revenue for all professional sport leagues (Lee & Chun, 2002). Mega television deals help not only professional sport leagues, but also the television companies that acquire the deal. Television audiences are increasing every year, which creates unique opportunities for sponsors, offering more revenue generating options for leagues.

Table 4 outlines current television broadcast deals for each of the four major professional sport leagues. The data shows that television broadcasts play a crucial role in league operations.

If TV viewership continues to increase then the TV deals could become even larger. Reducing the number of games played could be problematic for TV contracts with professional sport.

Table 4.

*Television contracts of all four professional leagues*

League	Deal Amount (\$)	Length of Contract (Year)	Contract Expiry	Broadcaster
NFL	\$27 Billion	9 Years	2022	FOX, CBS, NBC
	\$4 Billion	4 Years	2014	DirectTV
NHL	\$2 Billion	10 Years	2021	NBC and Versus
	\$5.7 Billion	12 Years	2026	Rogers
NBA	\$7.4 Billion	8 Years	2016	ESPN/ABC, TNT
MLB	\$12.4 Billion	8 Years	2021	FOX, TBS, ESPN

As each league adds new sponsors, it has to develop strategies to keep the sponsor satisfied. In the case of the MLB, the large amounts of games help increase the reach and exposure of each sponsor. However, MLB has to create new ideas to activate the sponsor on a nightly basis. With modest schedules, the NBA and NHL still require constant activation and must be more vigilant with less opportunity to showcase sponsors. Finally, the NFL has the largest reach, but only has a limited number of opportunities to activate their sponsors.

### **Growth and Learning Aspects of Professional Sport**

Sport games that are close in score often have a high sense of uncertainty, which in turn helps increase fan interest in such sport (O'Reilly et al., 2011). In order for games to remain close, the two competing teams must have similar abilities. This notion is described as competitive balance. Schmidt and Berri (2001) stated that when there is an increase in competitive balance, there will be an increase in the uncertainty of outcome. When uncertainty is high, fans will spend more money attending games and purchasing merchandise (Funk, 2012). However, definitions of competitive balance have changed over the years because of its complexity. According to research, competitive balance exists when every team in the league has the opportunity to reach post-season play (Levin & McDonald, 2009).

Historically, the NFL has had the highest competitive balance, while the NBA has had the lowest competitive balance (Berri, 2012). Popular teams such as the Miami Heat and Los Angeles Lakers lower the competitive balance of the league because of the large amounts of talent on their team. The success of the high paid talent on specific teams also creates an imbalance of a league because one or two teams are always winning. Fans therefore expect these teams to win and thus, do not have high expectations of a competitive game. When this occurs, attendance drops, as does the total reach of the league, which ultimately causes a reduction in league finances (Levin & McDonald, 2009).

Competitive balance is important to consider in this study because shorter seasons may change the landscape of a league. With a reduction in the number of games played the competitive balance of a league could be increased, similarly to that of the NFL. To further explain this point, the uncertainty of outcome should be examined for all four leagues. Specifically, do fans show more interest in the last half of the year causing earlier games to become irrelevant? It could be argued that every game is important in the NFL because of a short schedule. However, in the NHL, 82 games may result in fans not worrying about outcomes until the middle of the season.

### **Theories and Frameworks**

When the focus of a study has many different parts, following a specific theory or framework, especially one with a narrow perspective, can be difficult. Multiple management theories had the potential to guide this study, including the Balanced Scorecard, Resource Dependence theory, Behavioural Assumption theory, Prospect theory, Game theory, and the theory of Supply and Demand. While reading about each theory, it became evident that a singular theory, the Balanced Scorecard, would be able to guide the study due to the studies'

exploratory nature. The framework chosen is meant to guide the development of the study rather than aid in expanding a theory.

It is necessary to justify the reason for the exclusion of the remaining theories in order to understand why the Balanced Scorecard was chosen. First, Resource Dependence theory focuses excessively on the external resources of an organization, such as consumers, while omitting the internal resources of the leagues (Mitchell, Agle & Wood, 1997). However, in order to implement competition time changes, a strong emphasis on the internal resources of the league is required. Resource dependence theory also emphasizes the importance of partnering or acquiring other organizations to fill the void of missing resources (Pfeffer & Salancik, 2003), which is not a common practice in professional sport. Finally, resource dependence theory focuses on the behavior of an organization rather than the performance outcome. Given that the main focus of this study is how competition time affects performance-based financial variables, this theory is not appropriate for the study.

With Behavioural Assumption theory, there is a strong emphasis on consumers and how to maximize their utilities. The theory states that when faced with a particular decision consumers will look to maximize their profits and in doing so create the best outcome (Sen, 1977). Rationality and self-interest are the two most important characteristics of this theory. When faced with difficult decisions or changes, consumers will use rational thought to conduct their response (Krautmann & Berri, 2007). In conjunction with this notion, consumers will also make the decision that is in the best interest for them. While these characteristics are both of interest and could be applied to this study, consumers are not only factors that will be analyzed.

While prospect theory was considered, there was too much emphasis on the micro transactions of the losses and gains, rather than emphasizing the entire picture (Kahneman &

Tversky, 1979). Another main component of this theory is the risk associated with making decisions based on different circumstances. The emphasis on behavior and how it changes based on real life scenarios is not applicable to this study as changing competition time would be a league decision, not a consumer choice.

Game theory was also compelling and offered the second best source of guidance, but was not selected because it overemphasized external behaviors and underemphasized internal behaviors. Game theory is generally used to understand behaviours and decision making of key stakeholders such as firms and consumers (Osborne & Rubinstein, 1994). The theory tracks how certain stakeholders react to various problems and how they then form their decisions. This would be important after the competition time concept is developed to determine how consumers would act and make decisions based on the change to league structure.

Finally, the supply and demand theory was also considered because of its ties to exclusivity and finance. However, there was a lot of focus on the product and not enough on the environments surrounding the product. The theory simply states that as a product becomes scarce the demand will increase, which will thereby increase the price of the product (Neale, 1964). While this is important for the study since competition time would have a direct affect on supply and demand, the analysis is not focused on the product alone.

As illustrated in Table 5, multiple management theories exist; however, none of the abovementioned theories examine business from a holistic perspective.

Table 5.

*Description of five potential considered for this study*

Theory	Description
Resource Dependence	<ul style="list-style-type: none"> <li>• Studies how external resources of organizations affect the behaviour of an organization</li> <li>• External resources are important to the</li> </ul>

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Behavioral Assumption	strategic management of an organization <ul style="list-style-type: none"> <li>• Humans or “fans” attempt to maximize utilities</li> <li>• Maximizing utilities results in the largest profit and outcomes</li> </ul>
Prospect	<ul style="list-style-type: none"> <li>• Decisions are made based on potential value of losses and gains, rather than final outcome</li> </ul>
Game	<ul style="list-style-type: none"> <li>• Attempts to model real-life choices</li> <li>• Strategic decision making</li> <li>• Understands large collections of economic behaviors, such as markets and consumers</li> </ul>
Supply and Demand	<ul style="list-style-type: none"> <li>• As the amount of a product decreases, there is an opportunity to increase the price because consumers will want to buy that product.</li> <li>• It also works in reverse, if there is too much product, the price is decreased because the consumer is not interested</li> </ul>

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### Balanced Scorecard

The Balanced Scorecard (BSC) is unique as it uses multiple sections to evaluate the business as a whole. Specifically, the BSC is a strategy performance management tool that is used by managers to track various elements of a business (Kaplan & Norton, 1996a). As the BSC evolves, it is now considered and used for holistic strategy execution (Cobbold & Lawrie, 2002). The BSC was selected as the conceptual framework for the proposed study due to its holistic foundation (Figure 1).

In order to track each element of the business, the BSC is broken down into four sections: financial, customer, internal business processes, and learning and growth (Kaplan & Norton, 1996a). The financial category focuses on the finances of the business, specifically maintaining financial health and driving future strategy (Kaplan & Norton, 1996b). As this study focuses on the relationship between competition time and league finances, it is important to factor in the

financial strategies of each league. Since each of the leagues is an established business, the financial category will focus on other factors such as competition time will affect the financial growth of the leagues.

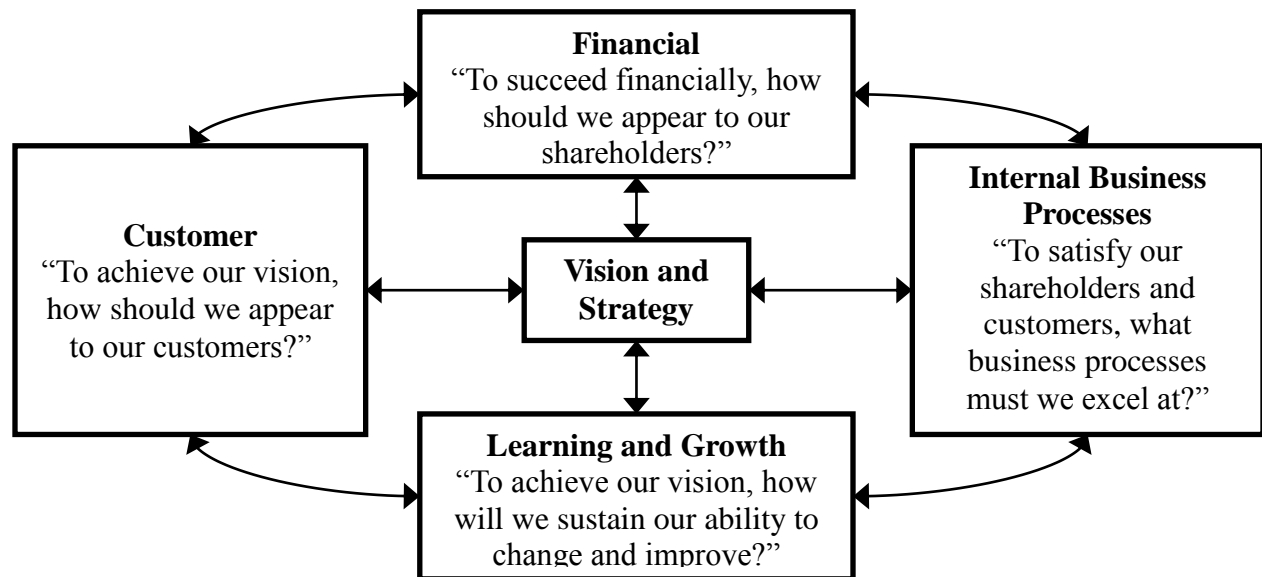


Figure 1. Standard template of the Balanced Scorecard, developed by Kaplan and Norton (1996a)

Tracking the increases and decreases of league valuation, revenue and profitability will prove crucial in determining the success of the relationship.

League customers are crucial as they drive revenue through merchandise sales, concession stands, and gate receipts (Gladden & Funk, 2004). Focusing on customers helps businesses align outcome measures to target markets. The financial category does have a setback as it is not possible to measure the customer satisfaction level and thus, it is difficult to improve the category until it is too late (Kaplan & Norton, 1996a). Modifying the customer category will help show how each league can increase the value for its consumers, as well as expand to different target markets.

The internal business category manages what is most critical for achieving objectives in the financial and customer category (Kaplan & Norton, 1996a). It is assembled and analyzed

after the financial and customer categories are aligned. Internal business processes help define what is needed for current and future stakeholders and determine the best solution. The internal business processes category will be modified to account for the changes in competition time and how it will affect the financial and customer categories.

Finally, the learning and growth category examines and measures organizational learning and growth (Kaplan & Norton, 1996b). This category helps the leagues determine ambitious goals for the other three categories and ensures that all the goals are all achieved (Kaplan & Norton, 1996b). It is important to include the learning and growth category because it helps measure the successes of the other three categories and allows for new ideas to be implemented in order to achieve new goals. The emphasis on investing in the future, rather than the immediate future for short-term gains, is important to understand, as a change in the amount of competition time would be a long-term goal.

As previously stated the Balanced Scorecard is seldom if ever used in professional sport research. Recently, Parrish and Kim (2014) used a modified Balanced Scorecard to analyze eMarketing tools for minor league baseball. Similar to this study, Parrish and Kim (2014) adjusted the Balanced Scorecard to better suit their research goals. This is an example of why the Balanced Scorecard is such a good tool for sport management. Since no two leagues are the same the Balanced Scorecard can be adapted to fit with the business practices of each individual leagues. By adapting the Balanced Scorecard the users can learn how to improve strategies and engage more customers (Parrish & Kim, 2014).

Since the four categories of the Balanced Scorecard blend well with professional sport, it is confusing as to why it has seldom if ever been used in sport management research. That being said, the Balanced Scorecard is a rendition on Stakeholder Theory, which is a popular qualitative

theory in sport management (Jensen, 2002, Doherty, 2013). The similarities between the two frameworks/theories include listing all potential stakeholders and how they impact an organization (Jensen, 2001). The Balanced Scorecard is similar, but populates and organizes the categories that are most important to helping a business succeed. With this in mind the two strategies can be fused to help enhance sport management research and the success of businesses. The Balanced Scorecard was also chosen because of its use and transferability to in the professional world (Ittner, Larcker & Meyer, 2003). One of the main purposes of the Balanced Scorecard is for it to be used and implemented by managers at every level of business (Jakobsen & Leug, 2014). This is especially important in professional sport because these scorecards would need to be passed down from the league offices, to franchises to managers. Creating an easy to use model that can be used by all managers is essential for implementation. This is the goal of using this framework, because the research is very empirical it is crucial that it can be easily adapted for real world settings. It is felt that no other framework offered this, which is why the Balanced Scorecard is being used as the guiding framework.

## **Method**

### **Data Collection**

To ensure accurate results and obtain a holistic understanding of competition time an extensive database was created using variables from past research and variables identified throughout the six Mini-Studies below. The Mini-Studies have a two-fold purpose, first being that they introduce each of the leagues to competition time and how they are impacted. Secondly the Mini-Studies provide an outline to determine which variables are to be used in the database for statistical analysis. The use of an extensive database follows common research practice laid out by (Comrey & Lee, 1992), which states that a large sample size will provide clear and

accurate results. Thus, data was collected over a 10-year period for each of the four leagues examined starting in 2003-2004 and finishing in 2012-2013. By examining the leagues over ten years, the researcher will attempt to limit as many outliers as possible. In total, there was data collected for 51 variables for each of the four leagues with each variable having an n-value of 1219. The 51 variables used for this study were chosen based on previous sport management research. A complete list of the variables along with description and sources are listed in Appendix E. The dependent variables being examined to determine the effect of competition time will be Forbes Valuation, Forbes Revenue and Forbes Profitability.

During the time period of data collection, there were some team changes in three of the four leagues. Location of the professional sport franchises is of importance to the research because the number of professional sport teams in the market area affects different locations; therefore franchises in both Canada and the United States (US) will be examined. Firstly, the NHL had 24 teams located in the United States and 6 teams located in Canada prior to the 2011-2012 season. In the 2011-2012 season, the Atlanta Thrashers were relocated to Winnipeg thus changing the landscape to 23 teams located in the US and 7 teams located in Canada. During the same time period in the MLB there were 28 teams located in the US with two being located in Canada. However, after the 2003-2004 Montreal relocated to Washington, which resulted in there being only one team in Canada, the Toronto Blue Jays. When looking at the NBA they had 29 teams in the US and 1 team in Canada, the Toronto Raptors. While teams relocated, it was always within the US and therefore there was no change in the team landscape. For the time period of the research there was no team relocation in the NFL. All 32 NFL teams are located in the US. Since two of the four leagues entered a lockout (one full lockout and two half lockouts) over the ten-year period, the appropriateness of the variables in those years will have to be

examined for use in the statistical analysis. However, it is still important to include the variables as the teams brand continued to exist.

Data was collected through reliable secondary resources such as Forbes and ESPN. Other secondary resources used were based on availability, access, and confidence in the data.

Similarly, Nadeau and O'Reilly (2006) used team websites, league websites, Forbes and ESPN, among other resources when compiling a professional sport database. The reason for collecting secondary data is because professional sport leagues are private entities and are not obligated to release data, thus making it difficult to acquire primary data.

### **Mini-Study 1 – The NFL: Number One League in North America**

Historical and recent television ratings, league revenue, and merchandise sales point to the NFL being the most lucrative of the four major professional sport leagues in North America (Gaines, 2014). The purpose of this Mini-Study is to show how the NFL is positioned as the most dominant league in North America from a financial standpoint even though they play the least amount of games. In the US, the first sporting brand to come to the mind of consumers is the NFL. Not only have they built a great product on the field, they have built an organization that generates billions of dollars per year (Schrotenboer, 2014). While there are many moving parts of the NFL, the main sources of revenue include gate receipts, television deals, merchandise and concessions.

What separates the NFL from the other three leagues is the fact that they have league wide revenue sharing. This means that there is an equal divide of revenue for all 32 teams. Using this method injects cash into all of the leagues' teams and thus creates a stronger league brand. Appendix A illustrates that each NFL team has a similar amount of revenue in 2012 and 2013. This distinguishes the NFL from the other three leagues and as such sets up each team to

succeed, thus creating an overall stronger league brand. As a brand generates more equity it becomes more appealing for potential owners and increases the interest of consumers.

Consumers are considered to be one of the most important aspects of professional sport. The NFL has created an atmosphere where fans can interact with others and create a sense of togetherness that brings them back every Sunday. Engaging with fans is a key reason why the NFL does well both financially and on the field.

The NFL has a significant television deal that drives growth and generates revenue. This lucrative contract is divided equally amongst the teams, which they can spend according to their own discretion and create a better overall product (Badenhausen, 2011). In comparison, the other three leagues distribute broadcast rights across various RSN, which consumers must pay extra to watch if they are out of the designated marketing area. The NFL leverages a national broadcast deal because they continue to attract record-breaking television audiences that other leagues cannot match. This is particularly evident with the astronomical fees associated with the Super Bowl. This relates back to a small amount of competition time as there is only one game to decide the league champion. The NFL can request large sums of money for advertisement and sponsors because football fans will tune in, as it is the last chance to watch football for the season. Other leagues have playoffs spread out across 4-7 games (more competition time) and thus must spread the time out for sponsors and advertisers.

In order to determine if there is a difference between competition time and the NFL, a research specific variable was created called "NFL". The variable assigns a binary value to distinguish between the NFL and the other leagues. This will help illustrate that the lack of competition time has a direct relationship with the NFL and thus a relationship with the three dependent variables (team valuation, revenue and profitability).

**Mini-Study 1 – Analysis**

An examination of the NFLs revenue and profitable as a league for Mini-Study 1, shows that the NFL is above and beyond that of the other three leagues in North America. To ensure that competition time had an influence on the NFL and its league finances the variable developed was created for the correlation analysis. The variable created will show if there is a relationship between competition time and the NFL specifically. As such both the Pearson and Spearman correlation showed a significant correlation value of  $-.763$  and  $-.812$  respectively. This result shows that there is a relationship between the NFL and competition time. A further analysis of Table 8 shows there is a significant, positive correlation between the NFL and the three Forbes financial variables, which are dependent variables of this study. Together these results show that there is a positive relationship between the NFL, competition time and league finances.

**Mini-Study 2 – Game Importance in Professional Sport**

As described earlier, competition time is described as the number of regular season games played by a professional sport franchise. When discussing game importance it is assumed that the number of important games will increase as competition time decreases. This is the premise that was used to create this study and will therefore examine in detail how competition time can change the number and frequency of important games in North American professional sport. At the conclusion of this study, a game importance variable will be created to use for statistical analysis.

Firstly, game importance has been studied recently as it related to the uncertainty of outcome (Lei & Humphrey, 2013). Studies have shown that game importance can influence the attendance behavior of sport consumers (Mills & Fort, 2014). In turn this then affects the financial outcome for professional sport franchises. For instance, if consumers begin to lose

interest in their favourite team because games are no longer important then they won't spend money on tickets, concessions and merchandise, all antecedents of professional sport revenue. Already it is seen that game importance has an impact on two of the four components of the BSC, specifically finances and customers. However, it is important to note that game importance will change based on the number of regular season games played in each league. For example, because there is more competition time in MLB there is a greater threshold for when games become more or less important.

O'Reilly, Nadeau and Kaplan (2011) determined that in MLB games are no longer important after a team falls 5.5 games back on a playoff spot. Using this definition, a variable was created for the purpose of statistical analysis. The variable, called "Game Importance", is coded using a scale where a team is given a 1 if they play important games very frequently, a 2 if they played some important games and a 3 if they play little to no important games.

In order to determine what code a team was given, regular season standings were analyzed for each of the four leagues. The MLB 5.5 games back on a playoff spot finding was used in combination with competition time to determine when games are no longer important in other leagues. For example, NHL and NBA games are estimated to no longer be important after a team falls three games back of a playoff spot ( $5.5 \text{ games back per } 162 \text{ games played} = \sim 3 \text{ games back per } 82 \text{ games played}$ ). For the NFL there is a large difference in competition time and using this same method it was determined that after team fell between one and two games behind they were then considered to be less important. Standings were analyzed over the course of the season after each month to gain an understanding of how a team trended across an entire season.

The results from this study will help show how the number of important games is impacted by competition time for the other three leagues, not just MLB. There are further

implications of consumer behavior as well as financial changes that game importance may have on team valuation, revenue and profitability.

### **Mini-Study 2 – Analysis**

Analyzing the correlation analysis for Mini-Study 2, it is seen that there is a strong relationship between game importance and competition time as well as playoff contention and competition time. There is also a strong relationship between game importance and the league variable. This suggests that the number of important games in each league is proportionate to the amount of competition time played in each league. Interestingly there is little no relationship between game importance and the Forbes financial variables. Therefore, it is assumed that the number of important games has no impact on the increase or decrease in team value, revenue and profitability.

### **Mini-Study 3 – Impact of Lockouts on the NHL and NBA**

Professional sport lockouts have become common over the past decade. In total there has been one full lockout, one lockout that lasted an entire off-season with no games lost and two half lockouts that shortened the season for both the NHL and NBA (Grow, 2013). Lockouts no doubt have an impact on the league, its teams as well as the consumers. This Mini-Study will examine the lockouts for both the NHL and the NBA. The reason for this Mini-Study is to show how a reduction in competition time (time lost to the lockout) can change the financial outlook for each of the leagues.

The first of the two leagues to be examined is the NHL because their league has had the most recent lockout and the only professional sport league in North America to suffer a full season lockout in the last decade (Staudohar, 2005). For fans of the NHL, the 2004-2005 season will remain a sour point for some years as they had to sit through an entire season with no NHL

hockey. Undoubtedly the NHL suffered both from a public relations standpoint and a brand and financial standpoint (Staudohar, 2005). Arenas remained empty and merchandise was hanging stagnate on store shelves. With league revenue reported at roughly \$2.2 billion the year before (Brinkman, 2006), the NHL lost out on that plus more as a result of the lockout. Since the 2004-2005 lockout, the league has flourished with increases in both team value and team/league revenue.

What separates the 2012-2013 NHL lockout from that of 2004-2005 lockout is that the league was able to salvage half of its games. This means that each team was able to generate revenue in a shortened season and provide a context for how less competition time would look in a practical setting. The 2012-2013 lockout lasted about half of the season with teams playing 42 games. Appendix B shows team value, revenue and profitability for the NHL in the year before the lockout that had 82 games played per team and the same values for the lockout shortened season of 42 games. A simple analysis of the data shows that there was a decrease in team value for all 30 franchises in the lockout season. Interestingly, there was an increase in the number of teams who generated a positive profit in the lockout season compared to the previous season, specifically those from the southern states who struggle regularly with finances. The analysis becomes even more interesting when examining small and large market teams. Compared to the year before the lockout, large market teams had a sizable difference in revenue and profit as opposed to small market teams. A decrease in competition time resulted in fewer expenses for small market team, which resulted in higher profits compared to a full season. This supports the notion that a reduction in competition time could create a more competitive balance in the NHL and other professional leagues across North America.

When examining the NBA pre and post lockout the picture is somewhat different. The NBA has struggled for many years with competitive balance both on and off the court (Zimbalist, 2002). Every year it is the same team making the playoffs and Appendix C shows that it is those same teams generating the most revenue year over year. Unlike the NHL, the NBA lost only a quarter of the season as each team was able to play 66 games instead of 82. Again a comparison of the two seasons shows that while there were a number of teams who lost money there was more financial continuity across all teams. Following the lockout, the league reverted back to a wide gap financially between those teams who consistently make the playoffs and those teams that do not (Burum, 2014). Similar to the NHL, the NBA lost brand value from both a league and team standpoint (Humphrey, 2013). Again there were substantial financial losses for the league as roughly \$480 million was lost purely due to games missed. Perhaps the biggest impact of the lockout was on the NBA and its partners, both league sponsors and official broadcasters. These partners also lost money as they were not able to broadcast NBA games, players and merchandise.

It is seen that professional sport lockouts are problematic both for leagues as a whole and individual franchises. However, the lockouts are able to show that consumers will come back, fill stadiums and purchase merchandise just the same as if there was a full season. Where this concept becomes more important is the balance it brings to large and small market teams. Increasing the competitive balance throughout leagues helps not only the brand of each league but also their bottom line. As such, a variable was created to determine the relationship between competition time in a lockout season versus a non-lockout season.

### **Mini-Study 3 – Analysis**

For Mini-Study 3 the pre-post lockout variable was created for the purpose of showing that the change in competition time during the lockouts has an affect on league finances. An analysis of Table 8 shows that there is no relationship between lockouts and competition time. There is however a significant negative correlation between pre-post lockout and league finances. This is a future learning for league executives because it begins to show that there is a negative impact on league financials when there is a lockout. Moving forward a key learning is to work with the Players Associations to avoid such complications.

#### **Mini-Study 4 – MLB: The Hunt for October**

Major League Baseball currently has the most competition time of the four leagues with 81 home games per team. That is ten times as many home games compared to the NFL and two times as many homes games compared to the NHL and NBA. The large difference in competition time between the other leagues and MLB is of interest because there are fewer teams that make the playoffs compared to other leagues. With more competition time there is a greater chance that a MLB team will fall out of contention and thus lose the attention of the consumers (O'Reilly, Nadeau & Kaplan, 2001). This is especially evident in attendance capacity for MLB teams compared to that of the other three leagues. There are a number of teams that consistently sell out their stadium, but an even greater number who do not (Ahn & Lee, 2014). Not only does MLB struggle with attendance, it also has the lowest fan cost index (FCI) of the four major leagues (Rascher, 2014). Together these two variables provide a context that could suggest that MLB competition time is too high.

Over the course of seven months teams will play 81 home games no matter if the team is in playoff contention or if they are in last place. As the games continue, consumers may become less and less interested depending on the success of their team (O'Reilly, Nadeau & Kaplan,

2011). Consumers may also become less interested in the middle half of the games because they realize that these games have no relevance to outcome of the season. Here is where MLB has room to make a change and potentially increase league and team revenue. If there were fewer games for consumers to attend then they would be more compelled to purchase tickets at a higher price and attend more games. This strategy would benefit small market teams who struggle to fill stadium throughout the entire season. Large market teams will also benefit from the opportunity to increase ticket prices as there is less opportunity for consumers to see their favourite team. By decreasing the stress on small market teams there is less revenue that the top 15 teams would have to share with bottom 15 teams.

A large amount of competition time also has a unique impact on player salaries. Since players are expected to play 81 home games it can result in high salary demand, which may be difficult for some small market teams to compete. If the amount of competition time were to be reduced in MLB the salaries of players may begin to reduce because there are less game for them to play. This would be beneficial to small market teams because they afford high-end players, which will help them, compete for a playoff spot and ultimately a chance to win a league championship. As more teams become equal the competitive balance of the league will begin to increase, which will help grow financial metrics through MLB.

#### **Mini-Study 4 – Analysis**

To determine if there is a relationship between MLB and competition time, a research variable was created. This variable separates MLB from the other three leagues to show if competition time has an impact on everything related to MLB. Any relationship would begin to show the effect that competition time has on MLB and its financial performance. An analysis of

Table 8 shows that there is a positive relationship between MLB and competition time. However, there is only a significant correlation between MLB and profitability.

### **Mini-Study 5 – The English Premier League: Examining a League with No Playoffs**

The English Premier League (EPL) is one of the largest professional sport leagues in the world. Not only does the league generate significant revenue, there is also a worldwide following that leagues in North America do not have. For example, Manchester United has a worldwide fan club of 659 millions fans (Ozanian 2012b). The EPL is made up of 20 teams that play between 34-38 games per season. Of these 38 games roughly half are played at home, similar to the four major leagues in North America. The top teams in the EPL are consistently at the top of the most valued professional sports teams released by Forbes (Ozanian, 2013). A distinguishing factor of EPL teams is that they are partly owned by the public and partly owned by wealthy individuals. This system was implemented to reduce the number of teams who would fold because of financial constraints. Despite the number of teams on Forbes yearly list, there is a large gap in competitive balance in the EPL. Since inception in 1992, there have only been five different teams to win the EPL championship. Due to a large amount of spending by top teams they are able to get ahead early in the season and distance themselves from other competing teams. Given that there are no playoffs in the EPL, teams who get ahead early often win the league championship.

The lack of playoffs in the EPL is the main focus of this study, as it will show how the league and fans differ from that of North American professional sport leagues. In North American sport leagues teams who fall behind early at the start of a season still have a chance to qualify for the playoffs and make a run for the league championships. Since there are no playoffs in the EPL teams who fall behind at the beginning of the season often have no chance of winning

a championship and therefore consumers lose interest in those teams. However odd this situation is, it creates a unique dynamic for consumers of the EPL. Since each regular season game puts a team closer to a championship, it is felt that all games are like playoff games. Using this logic, it is assumed that all regular season games are important, which results in increased ticket prices and a willingness to attend games that will generate more revenue. If every regular season game was treated like a playoff game in North America teams may generate more revenue and thus increase the value of their teams similarly to those of the EPL.

A lack of playoffs has the most effect on consumers. Since each team only plays 34 or 38 games there is already a limited number of opportunities for a consumer to watch their team. With fewer opportunities to attend games the demand factor increases, which also results in higher prices for not only tickets, but also concessions, merchandise and sponsors. The atmosphere that is created by this compels consumers to keep coming back and increases the brand of both the league and its teams. It is not being suggested that North American professional sport leagues adopt this format, but with competition time as the determining factor of league championship it increases the revenue and value of EPL teams.

### **Mini-Study 6 – Ratio Development**

The ratios in this study will be used to determine the financial performance of North American professional sport with competition time as the key determinant. When developing these ratios, competition time was defined as the total number of home games played by a professional sport franchise. The other primary variables that will be used in this study are team valuation, revenue and profitability all of which are taken from Forbes. In addition, fan cost index (FCI), taken from Team Marketing Report, is the cost of two adult tickets, two children's tickets, four hot dogs, two sodas, two alcoholic beverages and parking (Krautmann & Berri,

2007). The ratios used in this study are adapted from basic financial ratios previously developed and include current ratios, asset turnover and profit margins (Barajas & Rodríguez, 2010). Table 6 provides a summary of the five ratios developed for the analysis.

The first ratio developed for competition time,  $F_{rev}/CT$ , is an adaptation of a current ratio involving total franchise revenue ( $F_{rev}$ ) over competition time (CT). This ratio measures the financial health of a team in its current state (Barajas & Rodríguez, 2010). An optimal measure for this ratio is any value over 1. A higher ratio value shows that a team is financially healthy and generates a significant amount of revenue as a function of competition time. It is expected that the NFL will have the highest ratios because of a low competition time and extremely high revenues. The analysis will help show how similar leagues like the NHL and NBA compete in terms of revenue generated as a function of competition time. MLB will be of interest because if the ratios were greater than that of the NHL and NBA then it would show that MLB generates revenue efficiently compared to the NHL and NBA.

The second ratio developed,  $F_{profit}/CT$ , is a current ratio examining franchise profitability ( $F_{profit}$ ) over competition time. Franchise profit is also taken from Forbes' yearly reports on professional sport. The profit of professional sport franchises is calculated before taxes and interest. This ratio will determine the profit generated as a function of competition time by professional sport franchises. Again the value of this ratio should be above 1 in order to suggest financial health. A higher ratio value means that teams generate profits more efficiently when there is less competition time. If the ratio value is negative, which indicates a loss, then the value is better if it is closer to zero as opposed to be higher than 1. It is again expected that the NFL will have the highest ratios as they have the lowest competition time. This simply means that an

assumption can be made that a reduction in the amount of competition time could yield more profits for individual teams in other leagues.

Asset turnover ratio will be calculated using the following formula,  $F_{rev}/FranchiseValue$ . This formula was used to determine the efficiency of the franchise based off of the yearly Forbes professional sports reports. Since Forbes Franchise Value is the combined value of team's assets, this value is used to best demonstrate financial efficiency. For this ratio a high value is preferred as it shows that a team is generating more revenue per dollar of its combined assets (Brown et al, 2010). It is important to note that there is no threshold to reach in order to determine efficiency; it is simply the higher the value the more financially efficient a team is. Since the NFL uses a league wide revenue sharing model, it is expected that this ratio will have similar outputs for each team. In the leagues with limited league revenue sharing, there is expected to be more variability in the outputs. This is the first ratio that does not use competition time; it is merely to provide a picture as to the efficiency of teams in each league.

The profit margin ratio was developed using the following formula,  $F_{profit}/F_{rev}$ . Forbes' yearly reports are again used for this ratio, which determines the percentage of profit generated by each franchise as a function of revenue. The desired outcome for this ratio is to be as high as possible. A high value for this ratio shows that a team generates a considerable amount of profit for every dollar spent (Brown et al, 2010). This ratio is very useful in that it can be compared against other leagues to show the difference in profit generation. It is also important to note that this ratio is generally displayed as a percentage (ex.  $0.20 = 20\%$ ), which means that for every dollar spent a team would hypothetically profit 20 cents. Again, this ratio does not take into account competition time; it is merely to show how the four leagues compare to each other in terms of finances.

The final ratio measures fan investment as a per capita ratio to determine how much money fans invest per competition time. The ratio is expressed as  $[TA*(FCI/4)]/CT$ . Total attendance (TA) is a new variable that is taken from ESPN reports, which tracks how many people attend home games for each franchise over the whole season. Fan Cost Index (FCI) is divided by four to account for the number of seats associated with the cost. This ratio is meant to show how much consumers actually spend based on competition time and how leagues can change based on this number. A high value shows that fans spend more when there is less competition time. This will help show that prices can be increased for items such as tickets, concessions and merchandise if there is a reduction in the amount of competition time.

The five ratios developed in this study (Table 6) will be inputted into the database and analyzed appropriately. Relationships between the five ratios as well as the leagues will be examined to show how varying competition time affects financial performance in North American professional sport.

Table 6.

*Description of six professional sport ratios developed from basic financial principles*

Ratio	Description
$F_{rev}/CT$	<ul style="list-style-type: none"> <li>Revenue generated as a function of competition time</li> </ul>
$F_{profit}/CT$	<ul style="list-style-type: none"> <li>Profit generated as a function of competition time</li> </ul>
$F_{rev}/FranchiseValue$	<ul style="list-style-type: none"> <li>Efficiency of the franchise</li> </ul>
$F_{profit}/F_{rev}$	<ul style="list-style-type: none"> <li>Percentage of profit generated by each franchise</li> </ul>
$TA*(FCI/4)]/CT$	<ul style="list-style-type: none"> <li>Fan investment as a function of competition time</li> </ul>

**Mini-Study 6 – Analysis**

When analyzing Table 8 for Mini-Study 6 it is seen that all of the ratios have a significant relationship with both competition time and the dependent variables. Interestingly there is a

negative significant relationship between Ratios 1,2,4 and 5. This is of interesting because these are ratios you want to increase as it represents strong financials. However, this does suggest that there is a relationship between financial health and competition time.

### **Statistical Analysis**

Following the compilation of the data through the discovery of key variables in the Mini-Study and previous literature a correlation analysis was conducted on the 51 variables. Since the data is formatted differently for each variable, both a Pearson and Spearman correlation analysis was used. Both analyses are considered appropriate and as such the variables are reported for both analyses, however if a conflict were to arise the Pearson Correlation value would be used. As expected there was substantial cross-sectional correlation due to the size of the data collection. In order to find the most appropriate variables, data reduction was undertaken on 40 of the 51 variables. The ratios developed in Mini-Study 6 were not included because the variables are a combination of other variables. Pre-Post Lockout was also removed because it only explained one of the leagues in the pooled sample. Both the NFL and MLB variables were removed for the factor analysis because the variables were created only to show a correlation between competition time in the NFL and MLB for Mini-Study 1 and Mini-Study 4, respectively. In order to determine commonality between variables a principal component analysis was used via a varimax rotation. Factors were considered if they had an eigenvalue greater than 0.8 so as to better understand the results (Weir & Vincent, 2012). Following the completion of the factor analysis, each variable is given a proxy variable to be used in the regression analysis. A proxy variable is assigned to each factor as a number of independent variables have the potential to load. The proxy variable is chosen based on its fit within the overall theme of the factor (Foster, O'Reilly, Shimizi, Khosla and Murray, 2014) that is determined based on the variables loaded

within each factor. When there a number of variables that load within a factor referencing the correlation analysis are key to determining which variable will be the best proxy (Weir & Vincent, 2012). Independent proxies were chosen over summary proxies because the independent proxies allowed for targeting, this is especially important with exploratory research when an average of the loaded variables would not properly explain the interactions. Following the data reduction linear regression models were built for Forbes Valuation, Forbes Revenue and Forbes Profitability. Each of the proxy variables identified through the data reduction were used as independent variables in each of the three regression models.

## Results

### Descriptive Statistics

To ensure the data was accurate and consistent across all variables a descriptive analysis was performed. As seen in Table 7 there are 1219 points of data for each variable. Also displayed in Table 7 are the means, standard deviations and descriptions for each of the 51 variables. A description of “non-relevant” in Table 7 simply implies that the mean is not relevant for that particular variable. For example, a mean of 2.53 for the variable League is irrelevant because that variable describes the type of league that is representing the other variables (e.g., NHL = 3).

Table 7.

*Descriptive statistics include the mean, standard deviation and variables description (n=1219)*

	Mean	Std Deviation	Description
Year	5.50	2.87	Non-relevant
League	2.53	1.13	Non-relevant
Country	1.07	0.25	Majority of the teams are from the US
All Star Total	1.91	1.92	1.9 all-stars per team
Star Trophy Total	0.28	0.58	Teams win 0.28 trophies per season

Local Hero	0.51	0.50	50% of the time there is a local hero on a team
Playoff Appearance	0.42	0.49	42% of teams make the playoffs
Playoff Progression	1.38	2.29	Average number of teams only make it to the first round
Defending Champ	0.03	0.18	3% of teams are defending league champions
Title Weighting	0.44	1.22	Few teams have won a championship in the data range
Win Percent Current	0.49	0.16	Average winning percentage of the current season
Win Percent Previous	0.49	0.16	Average winning percentage of the previous season
Win Percent Change	0.06	0.56	Average change in win percent
Game Importance	1.70	0.91	Majority of games played are important
Playoff Contention	75.90	51.46	The average number of games before a team is eliminated from playoff contention
Age of Team	52.28	33.02	Average of professional sport teams
Time in Current Market	45.42	30.75	Average time spent in the current market
Total Championships	2.86	4.31	Average number of total championships per team
Hall of Fame	13.47	14.40	13 Hall of Famers per team
Retired Jersey	5.04	4.12	5 Retired Jerseys per team
Attendance Percent Capacity	0.865	.215	Stadiums are 86.5% full
Raw Attendance	1,055,542.84	867,689.12	Average yearly attendance
Age of Stadium	17.60	17.49	Stadiums are 17.6 years old
Household Income	48,951.38	8,307.13	Average household income
DMA Homes	2,306,697.00	1,832,662.23	Average number of homes in a marketing area
Teams in Market All Pro	3.96	2.09	4 professional sports teams per market area
Teams in Market League	1.15	0.56	1.15 teams same league teams per marketing area
Merchandise Sales	0.51	0.29	Average rank per team
Player Salaries	74,864,505.16	30,546,241.02	Average team salary per year
ESPN Total Rank	0.48	0.29	Average cumulative fan

			satisfaction rank
ESPN Bang For Buck	0.48	0.29	Average team rank for the most bang for fans buck
ESPN Fan Relation	0.46	0.29	Average team rank for best fan relations
ESPN Loyalty	0.48	0.29	Average team rank for loyalty
ESPN Affordability	0.46	0.29	Average team rank for the affordability of the team
ESPN Stadium Experience	0.48	0.29	Average team rank for the experience at team stadiums
Ownership Type	1.40	0.49	Majority of teams are currently owned by one person
Forbes Valuation	538,586,546.35	364,969,562.15	Average team value
Forbes Revenue	157,261,689.91	74,047,589.99	Average revenue of teams
Forbes Profitability	15,042,083.68	23,434,211.64	Average profits of teams
Forbes Brand Value	53,005,742.41	45,123,466.45	Average brand value of teams
Fan Cost Index	278.73	105.68	Average cost of \$278 for fans
RSN	2.50	2.28	Average regional sport network rating
NFL	0.26	.440	26% of the teams from the NFL
MLB	0.25	.431	25% of the teams are from MLB
Pre-Post Lockout	1.55	0.724	Majority of time played was not in a lockout
Ratio 1 – Frev/CT	9.35	11.98	High ratio value, strong revenue
Ratio 2 – Fprofit/CT	1.16	2.46	High ratio value, strong profits
Ratio 3 – Frev/Ffranchisevalue	0.33	0.11	Low value means poor revenue growth based on franchise value
Ratio 4 – Fprofit/Frev	0.07	0.13	Poor profit margins
Ratio 5 – TA*(FCI/4)/CT	2,602,925.08	2,445,555.37	Cost of fans to attend regular season games
Competition Time	41.57	26.24	Average competition time of 41.5 games

### Correlation Analysis

To better understand the relationship between variables, a Pearson and Spearman correlation analysis was run using SPSS. The Pearson correlation values analyzed can be seen in

Table 8 while the Spearman analysis is seen in Appendix G. The correlation analysis was used as an exploratory measure to gain a base understanding of the interaction between the chosen variables. Due to the size of the data being analyzed it was expected that there would be significant interaction between most of the variables. However, when there was no interaction between variables it provided a base for determining the proper proxy variable is the factor analysis.

Competition time had a significant correlation in both the Pearson and Spearman analysis with the league variable, which was a pooled sample of the four leagues. This was expected, as there is a considerable difference in the amount of competition time between the four leagues.

Secondly, there was a strong correlation between competition time and all-star total for both analyses. However the star trophy total variable only had a significant correlation to competition time in the Spearman analysis. There is a strong correlation for historical variables such as age of team, time in current market, hall of fame and retired jerseys, which was expected as these variables have all been linked to professional sport revenue in previous research (Nadeau & O'Reilly, 2006).

There is also a strong correlation between competition time and attendance variables, suggesting that attendance could be impacted if there was a change in the amount of competition time. However, there is not a significant correlation between attendance capacity and competition time, which was not expected. This result suggests that consumers would still fill stadiums despite a change in competition time.

The correlation analysis also showed a strong correlation between the teams in market variables and competition time. This is valuable information because if other leagues were to

change the amount of competition time there would be some sort of impact on the teams from different leagues in the same market.

In both the Pearson and Spearman analyses there is no significant correlation between competition time and ESPN total rank. The five other ESPN variables all had significant correlations to competition time in the analyses. While it was expected that ESPN total rank would have a significant correlation it is perhaps more impactful that each of the individual variables that make up ESPN total rank have a significant correlation. With each variable having a significant correlation it provides a better understanding as to what specifically is most impacted by a potential change in competition time.

In the Pearson analysis there is a negative, significant correlation between competition time and Forbes valuation, revenue and profitability. However there is no significant correlation between competition time and Forbes brand value. The literature points to brands being an important aspect of professional sport and as such it was expected that brand value and competition time would have a significant correlation. As the Forbes variables are the only source of financial data for professional sport, these relationships are of the most interest for this study.

Finally, RSN also had a significant positive correlation to competition time, which was expected because any change in the amount of competition time would impact television ratings of all professional sports.

Table 8.

*Univariate Pearson correlation analysis for the three dependent variables and competition time*

	Pearson			
	Forbes Valuation	Forbes Revenue	Forbes Profitability	Competition Time
Year	.284**	.329**	.115**	-.034

League	.456**	.328**	.269**	-.605**
Country	-.172**	-.170**	.026	.028
All Star Total	.520**	.543**	.254**	-.141**
Star Trophy Total	.040	.063*	.000	.029
Local Hero	.269**	.324**	.214**	.033
Playoff Appearance	.046	.029	.018	-.082**
Playoff Progression	.099**	.120**	.062*	-.008
Defending Champ	.054	.061*	.035	.004
Title Weighting	.099**	.121**	.036	.023
Win Percent Current	.187**	.236**	.108**	-.005
Win Percent Previous	.139**	.146**	.066*	-.005
Win Percent Change	.145**	.149**	.079**	-.107**
Game Importance	.008	.060*	-.007	.084**
Playoff Contention	-.332**	-.034	-.212**	.963**
Age of Team	.273**	.396**	.167**	.311**
Time in Current Market	.362**	.443**	.189**	.153**
Total Championships	.280**	.296**	.183**	.079**
Hall of Famers	.199**	.278**	.198**	.233**
Retired Jersey	.138**	.218**	.055	.260**
Attendance Percent Capacity	-.128**	-.116**	.037	-.010
Raw Attendance	.043	.315**	-.049	.800**
Age of Stadium	.231**	.245**	.029	.069*
Household Income	.051	.059*	-.003	.039
DMA Homes	.136**	.121**	-.018	.082**
Teams in Market All Pro	.157**	.162**	.039	.085**
Teams in Market League	.115**	.126**	-.029	.111**
Merchandise Sales	-.507**	-.583**	-.270**	-.049
Player Salaries	.778**	.826**	.176**	-.116**
ESPN Total Rank	-.121**	-.084**	.062*	.046
ESPN Bang For Buck	-.116**	-.074**	.071*	.037
ESPN Fan Relation	.216**	.237**	.116**	-.065**
ESPN Loyalty	-.109**	-.072*	.042	.084**
ESPN Affordability	.357**	.327**	.244**	-.210**
ESPN Stadium Experience	-.131**	-.092**	.023	.069*
Ownership Type	.475**	.372**	.305**	-.524**
Forbes Valuation	1	.912**	.559**	-.408**
Forbes Revenue	.912**	1	.568**	-.124**
Forbes Profitability	.559**	.568**	1	-.245**
Forbes Brand Value	.754**	.725**	.370**	.019
Fan Cost Index	.566**	.455**	.366**	-.644**
RSN	-.725**	-.573**	-.416**	.764**
NFL	.725**	.573**	.416**	-.763**
MLB	-.019	.265**	-.032	.859**

Pre-Post Lockout	-.507**	-.583**	-.270**	-.049
Ratio1	.810**	.683**	.537**	-.737**
Ratio2	.683**	.600**	.813**	-.515**
Ratio3	-.526**	-.255**	-.253**	.554**
Ratio4	.372**	.375**	.845**	-.124**
Ratio5	.805**	.691**	.475**	-.678**
Competition Time	-.408**	-.124**	-.245**	1

\*\*p < .01 \*p < .05

**Factor Analysis**

In order to determine which variables had the most impact on the three dependent variables a factor analysis was conducted on 40 of the 51 variables. Removed variables included the Ratios because they were a combination of multiple variables, which would have thrown off the analysis. The analysis resulted in the reduction of the independent variables to 14 key factors. Together the 14 components accounted for 81.4% of the total variance. Table 9 shows the 14 factors as well as the associated eigenvalues, percent of variance explained and framework category. A full factor analysis can also be found in Appendix F. The 14 components all have an associated theme that is a result of multiple variables being grouped together. For example, component 5 was a combination of DMA Homes, Teams in Market All Pro and Teams in Market League, all of which represent the same theme (i.e. market dynamics). In this case the variable with the strongest value was used as the proxy variable. Most notably, Table 9 shows that competition time was chosen as a proxy variable for Component 1. This supports the exploratory study as it shows that there is the possibility of a relationship between competition time and the three dependent variables.

Table 9.

*Results of the data reduction via a factor analysis*

Component	Eigenvalue	% of Variance Explained	Framework Category	Proxy Variable
1	6.06	15.15	Internal Business	Competition

2	5.54	13.85	Process Consumer	Time Hall of Fame
3	5.26	13.16	Consumer	ESPN Total Rank
4	2.48	6.22	Financial	Playoff Appearance
5	2.20	5.52	Consumer	DMA Homes
6	2.04	5.11	Internal Business Process	Player Salaries
7	1.59	3.98	Consumer	Fan Cost Index
8	1.41	3.54	Learning & Growth	Country
9	1.20	3.02	Financial	Win Percent Change
10	1.14	2.85	Financial	Title Weighting
11	1.01	2.52	Consumer	Year
12	0.90	2.26	Consumer	Local Hero
13	0.85	2.14	Consumer	Star Trophy Total
14	0.81	2.04	Internal Business Process	Age of Stadium

### Regression Analysis

Using these 14 proxy variables, the three dependent variables (i.e., valuation, revenue, profitability) were analyzed and a model was created for each using a linear regression analysis. The 14 proxy variables were selected as they explained the majority of the variance and provided the best fit for all of the data analyzed. Each model depicts the dependent variable and works to explain its fit in the entire landscape of North American professional sport, not one specific league.

Table 10 presents the results of the regressions for each of the three dependent variables. It is important to note that in all three regressions the r-squared value is not equal to one and therefore the majority of the variance is explained in each of the regressions. The r-squared values in the Valuation model and the Revenue model are both high with significant model

results. The profitability model does have a small r-squared value, but the regression value is significant thus making it useful.

Table 10.

*Linear regression analysis for the three dependent variables valuation, revenue and profitability*

Category	Theme	Variable	Valuation		Revenue		Profitability	
			R <sup>2</sup> = .739		R <sup>2</sup> = .739		R <sup>2</sup> = .212	
			Beta	T	Beta	T	Beta	T
Regression	N/A	(Constant)		0.37		-1.91		0.06
Internal Business Process	League Brand Strength	Competition Time	-0.29	-13.08*	0.07	3.15*	-.114	-2.92*
Consumer	Team Brand Strength	Hall of Fame	0.09	5.51*	0.08	5.12*	.236	8.01*
Consumer	Fan Satisfaction	ESPN Total Rank	0.01	0.82	0.02	1.17	-.013	-0.40
Financial	Season Success	Playoff Appearance	-0.02	-1.59	-0.03	-1.90	-.040	-1.33
Consumer	Market Dynamics	DMA Homes	0.03	2.20*	-0.02	-1.51	-.051	-1.83
Internal Business Process	Player Brand Strength	Player Salaries	0.63	33.62*	0.69	36.91*	-.035	-1.05
Consumer	Consumer Spending	Fan Cost Index	0.09	3.64*	0.19	7.59*	.289	6.39*
Learning & Growth	Location	Country	-0.05	-3.20*	-0.06	-3.97*	-.028	-1.02
Financial	On field Success	Win Percent Change	0.02	1.66	0.04	2.66*	.016	0.56
Financial	Championship Success	Title Weighting	-0.00	-0.44	-.000	-0.36	-.004	-0.12
Consumer	Timing	Year	0.05	3.53*	0.06	4.06*	.023	0.79
Consumer	Player Type	Local Hero	0.09	6.25*	0.11	7.11*	.171	6.24*
Consumer	Player Skill	Star Trophy Total	-0.00	-0.42	-0.00	-0.24	-.019	-0.68
Internal Business Process	Team History	Age of Stadium	-0.02	-1.52	-0.05	-3.39*	-.059	-2.05*

\*p < .05

For the Valuation Model, displayed in Figure 2 and explained in Table 10, there are a number of significant independent proxy variables that have exploratory power. There are

significant independent variables represented in three of the four categories of the model. Of those significant variables, there are many that fall into the Consumer category of the model. This category is most associated to creating a better atmosphere for consumer of professional sports and includes variables such as Local Hero, Hall of Fame and Fan Cost Index. The DMA Homes variable is significantly positive thus supporting previous research that as the market size increases so too does the team valuation. Interestingly, the Playoff Appearance variable is the only variable that is not significant, which means that there is no positive or negative effect on team valuation if an individual team makes the playoffs. Most importantly the competition time variable is highly significant thus pointing to evidence that competition time does have an effect on team valuation. Country and Year are both significant and represent interesting variables as leagues can begin to learn year after year and create country specific strategies that will increase the value of teams in either Canada or the US.

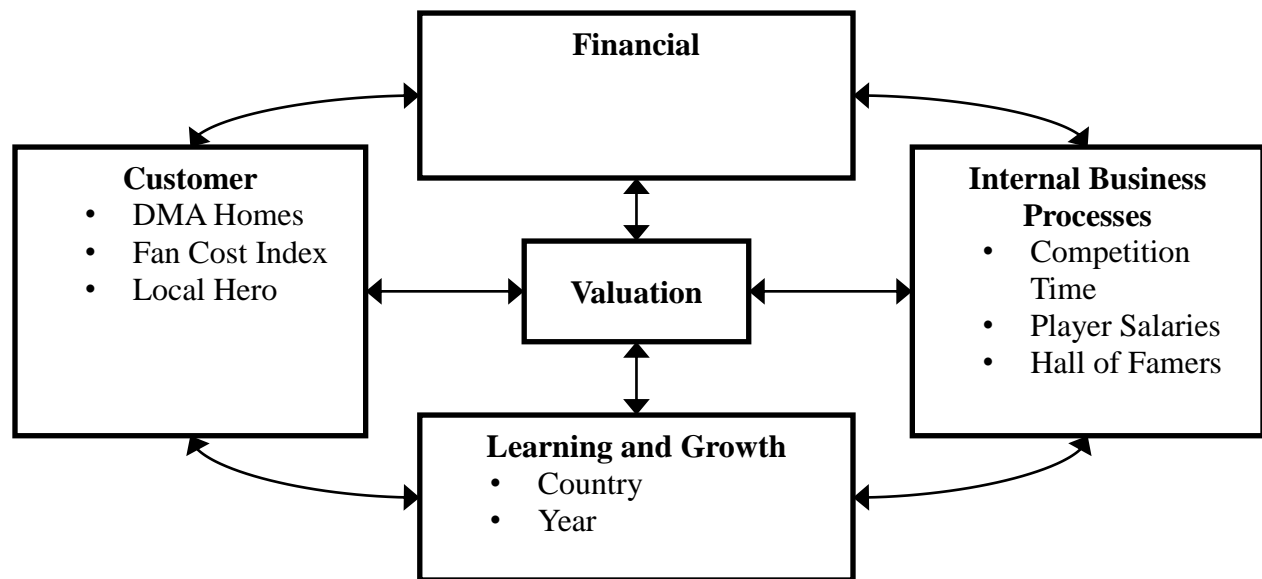


Figure 2. Model of the conceptual framework for team valuation

To further explain the interactions seen in Figure 2, the description of each interaction can be seen in Table 11.

Table 11.

*Description of interactions between categories in Figure 2*

Interaction	Variable	Category	Description	Support
1	DMA Homes	Financial	The size of a DMA will impact the financial category because franchises draw people from different sized areas. A larger draw helps increase the value while a smaller draw would limit the valuation. A significant correlation between DMA Homes and Valuation helps support this notion.	Correlation Analysis, Table 8
2	DMA Homes	Internal Business Processes	The size of a DMA impacts the business decisions of franchises as strategies and budgets differ depending on the size of a DMA.	Tainsky & Jasielec, 2014
3	DMA Homes	Learning and Growth	Franchises can learn from the size of their DMA how to implement strategies that are effective for their area so that they can grow as an organization and increase franchise value.	Tainsky & Jasielec, 2014
4	Fan Cost Index	Financial	FCI will impact the financial valuation of franchises because as fans spend more at games the value of the franchise will increase due to increases in ticket price, gate receipts and concessions.	Correlation Analysis, Table 8
5	Fan Cost Index	Internal Business Processes	Franchises need to properly manage the cost of items such as tickets and concessions to optimize value while still optimizing value.	Literature, Hyatt, Sutton, Foster and McConnell (2013)
6	Fan Cost Index	Learning and Growth	By examining the FCI on a regular basis franchises can learn and adapt prices to align with franchise goals and customer needs.	Literature, Mills and Rosentraub (2014)
7	Local Hero	Financial	Having a local hero on a team helps drive attendance which helps increase valuation because more customers are attending games and spending money, which helps increase the value of franchises	Correlation Analysis, Table 8
8	Local Hero	Internal Business	Internal processes on how to manage acquiring or keeping a local hero on	Nadeau and O'Reilly, 2006

		Processes	a franchise can help increase franchise valuation or potentially decrease the valuation if local hero's are traded.	
9	Local Hero	Learning and Growth	Local hero's are important for the learning and growth as a team because if a franchise can build around a local hero they have the potential to increase ticket prices and other revenue streams that will increase valuation.	Nadeau and O'Reilly, 2006
10	Competition Time	Learning and Growth	Competition time is important to learning and growth because if competition were to change then franchises need to adapt strategies to maximize the valuation potential	Correlation Analysis, Table 8
11	Competition Time	Customer	A change in competition time is important for consumers because it creates a supply and demand effect where they are willing to pay more to attend games because there are less opportunities to see their favourite franchise.	Correlation Analysis, Table 8
12	Competition Time	Financial	Competition time shares a relationship with the financial category because if there is less competition time, franchises can potential increase revenue drivers that would in turn increase the value of the franchise.	Correlation Analysis, Table 8
13	Player Salaries	Learning and Growth	As salary caps become increasingly popular, franchise must learn to manage salary expectations and limits in order to grow the franchise and increase the value.	Bryson, Frick, Simmons, 2013
14	Player Salaries	Customer	Player salaries interact with the Customer category because if fans feel that franchises are spending too much or too little on franchises it may impact their spending habits which would alter the franchise value.	Bryson, Frick, Simmons, 2013
15	Player Salaries	Financial	Player salaries affect team financials because if small market teams only have a certain budget they cannot spend over it or risk losing money	Correlation Analysis, Table 8

			year over year. Oppositely, teams with large budgets can spend more on players, which will attract fans who then spend more money increasing the franchise value.	
16	Hall of Fame	Learning and Growth	Learning from Hall of Famers and using their knowledge to help a franchise grow is important, especially for franchises that are new.	O'Reilly and Nadeau (2006)
17	Hall of Fame	Customer	Utilizing Hall of Famers to interact customers and provide them with opportunities to come to games and meet Hall of Famers helps drive franchise value, as customer will spend more money while at the arena/stadium.	O'Reilly and Nadeau (2006)
18	Hall of Fame	Financial	Hall of Famers help drive franchise value and increase the financial fortune of franchises because they bring history and class to franchises that resonates with multiple customer groups.	Correlation Analysis, Table 8
19	Country	Customer	The country of origin impacts the behavior of customers and increases or decreases the value of teams. Canadian NHL teams tend to have higher franchise values than US teams because Canadians have a great affinity for hockey.	Mills and Rosentraub, 2014
20	Country	Financial	Country plays a role in the financial category because the location of franchises often times affects a franchises value. Franchises need to learn how to utilize strategies based on their location in order to grow and increase in value.	Correlation Analysis, Table 8
21	Country	Internal Business Processes	The internal business processes of franchises change based on the Country the franchise is located in. Different strategies need to be developed based on the country so that the team can attract as many customers as possible who will spend money while watching games.	Mills and Rosentraub, 2014
22	Year	Customer	The success of a franchise during a	Leeds and Von

			given year will impact customer behavior and spending. Years when teams succeed more customers will attend games and spend money.	Allmen, 2004
23	Year	Financial	Franchise values can increase on years when teams succeed, but can also decrease in value if it was a poor performance year.	Correlation Analysis, Table 8
24	Year	Internal Business Processes	Year-to-year franchises adapt their management strategy and process to provide the best opportunity to succeed.	Leeds and Von Allmen, 2004

Similar to the Valuation Model, there are a number of significant independent variables in the Revenue Model as seen in Figure 3. The significant independent variable is represented in at least one of the four categories. Competition time is again significant and represented in the Revenue Model. This is important as it builds on the hypothesis that competition time will have an effect on revenue and the other financial variables associated with professional sport. To continue, revenue is not impacted by DMA home for this particular analysis. Thus the size of the market has no impact on the amount of revenue a team can generate. Title Weighting is also not significant in the Revenue Model, which follows that of the Valuation Model. This outcome is obscure because there is usually an influx in revenue as teams continue to win championships. Significant independent variables such as Hall of Fame and Local Hero demonstrate that the history and team strength will have a positive impact on the internal workings of league teams. Finally, Team Success is also significant, which supports the literature in that a positive change in winning percent will result in an increase in team revenue. Country is again significant and represented in the model, which carries exploratory power, as the difference in location will bring about different levels of revenue.

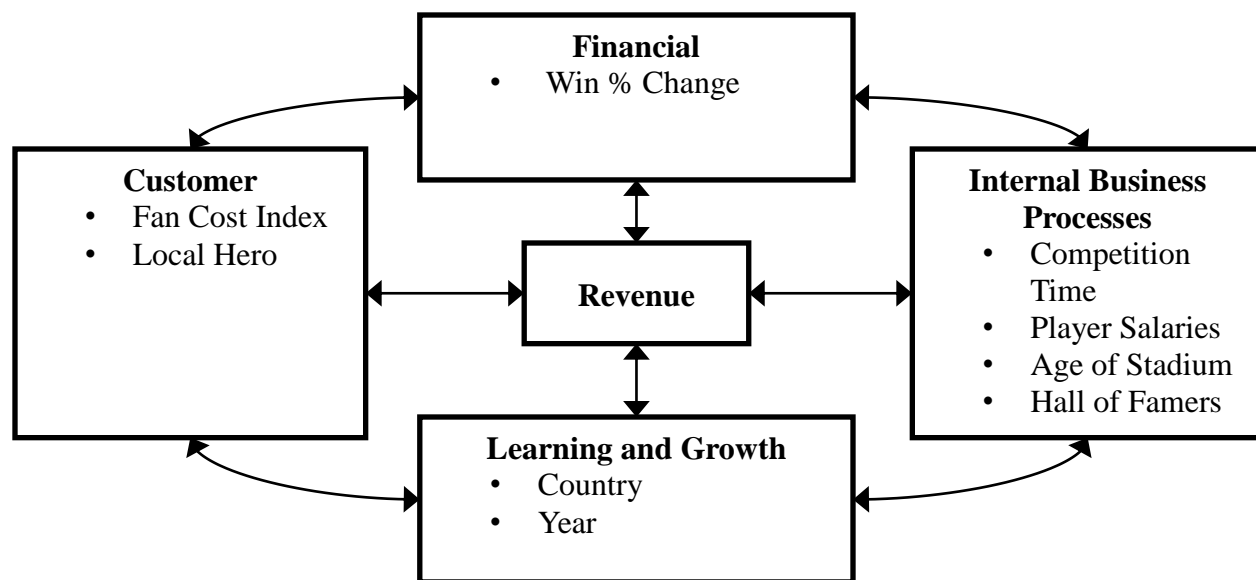


Figure 3. Model of the conceptual framework for team revenue

The interactions seen in Figure 3 are further explained in Table 12 through descriptions and resources.

Table 12.

*Description of interactions between categories in Figure 3*

Interaction	Variable	Category	Description	Description
1	Fan Cost Index	Financial	Fan Cost Index impacts revenue because the cost to attend games will increase the revenue for franchises.	Correlation Analysis, Table 8
2	Fan Cost Index	Internal Business Processes	The brands of teams can change how much they charge for tickets which is a component of Fan Cost Index and helps drive revenue.	Hyatt, Sutton, Foster and McConnell (2013)
3	Fan Cost Index	Learning and Growth	By implementing dynamic strategies throughout the season, franchises can alter FCI to drive revenue.	Mills and Rosentraub (2014)
4	Local Hero	Financial	Local Hero's can help increase the overall revenue of a team because of the connection between fans.	Correlation Analysis, Table 8
5	Local Hero	Internal Business	Internal processes on how to manage acquiring or keeping a	Nadeau and O'Reilly, 2006

		Processes	local hero on a franchise can help increase revenue or potentially decrease revenue if local hero's are traded.	
6	Local Hero	Learning and Growth	Local hero's are important for the learning and growth as a team because if a franchise can build around a local hero they have the potential to increase ticket prices and other revenue streams.	Nadeau and O'Reilly, 2006
7	Win % Change	Internal Business Processes	Franchises who invest internally to help increase the success of the team will drive fans to the stadium to spend money and increase revenue.	Késenne, 2000
8	Win % Change	Learning and Growth	Learning how winning impacts revenue, will help teams grow financially and implement effective strategies for growth.	Késenne, 2000
9	Win % Change	Customer	Customers enjoy when teams win and will ultimately go to more games where there will spend money on tickets and concessions to help drive revenue.	Késenne, 2000
10	Competition Time	Learning and Growth	Competition time is important to learning and growth because if competition were to change then franchises need to adapt strategies to maximize revenue.	Correlation Analysis, Table 8
11	Competition Time	Customer	A change in competition time is important for consumers because it creates a supply and demand effect where they are willing to pay more to attend games because there are less opportunities to see their favourite franchise.	Correlation Analysis, Table 8
12	Competition Time	Financial	Competition time shares a relationship with the financial category because if there is less competition time, franchises can potential increase revenue drivers.	Correlation Analysis, Table 8
13	Player	Learning	As salary caps become	Bryson, Frick,

	Salaries	and Growth	increasingly popular, franchise must learn to manage salary expectations and limits in order to grow the franchise and maximize revenue.	Simmons, 2013
14	Player Salaries	Customer	Player salaries interact with the Customer category because if fans feel that franchises are spending too much or too little on franchises it may impact their spending habits which would impact revenue.	Bryson, Frick, Simmons, 2013
15	Player Salaries	Financial	Player salaries affect team financials because if small market teams only have a certain budget they cannot spend over it or risk losing money year over year. Oppositely, teams with large budgets can spend more on players, which will attract fans who then spend more money increasing revenue.	Correlation Analysis, Table 8
16	Age of Stadium	Learning and Growth	As the age of stadiums increase new strategies need to be learned in order keep fans interested in returning to old stadiums and spend money to increase revenue.	Miller (2009)
17	Age of Stadium	Customer	Customers appreciate new stadiums where the amenities and attractions are plentiful, rather than older stadiums that are rundown and offer little entertainment value and deter fans from spending money.	Miller (2009)
18	Age of Stadium	Financial	As stadiums increase in age owners must spend more to maintain them, in hope of increasing revenue. New stadiums help to increase revenue because of the offers available to fans.	Correlation Analysis, Table 8
19	Hall of Famers	Learning and Growth	Learning from Hall of Famers and using their knowledge to help a franchise grow is	O'Reilly and Nadeau (2006)

			important and help increase revenue through special events.	
20	Hall of Famers	Customer	Utilizing Hall of Famers to interact customers and provide them with opportunities to come to games and meet Hall of Famers helps drive revenue, as customer will spend more money while at the arena/stadium.	O'Reilly and Nadeau (2006)
21	Hall of Famers	Financial	Hall of Famers help drive revenue for franchises because they bring history and class to franchises that resonates with multiple customer groups.	Correlation Analysis, Table 8
22	Country	Customer	The country of origin impacts the behavior of customers and increases or decreases the revenue potential of teams.	Mills and Rosentraub, 2014
23	Country	Financial	Country plays a role in the financial category because the location of franchises often times affects a franchises value. Franchises need to learn how to utilize strategies based on their location in order to grow and increase revenue.	Correlation Analysis, Table 8
24	Country	Internal Business Processes	The internal business processes of franchises change based on the country the franchise is located in. Different strategies need to be developed based on the country so that the team can attract as many customers as possible who will spend money while watching games.	Mills and Rosentraub, 2014
25	Year	Customer	The success of a franchise during a given year will impact customer behavior and spending. Years when teams succeed more customers will attend games and spend money.	Leeds and Von Allmen, 2004
26	Year	Financial	Revenue can increase on years when teams succeed, but can also decrease if it was a poor	Correlation Analysis, Table 8

			performance year.	
27	Year	Internal Business Processes	Year-to-year franchises adapt their management strategy and process to provide the best opportunity to succeed and maximize revenue.	Leeds and Von Allmen, 2004

The final model shows the regressions analysis for profitability, which is seen below in Figure 4. One of the key factors about this model is that two of the four categories do not have representation, as the variables associated with these categories were not significant. In this model only five of the independent variables are significant, which is explained by the low r-squared value. Despite a low r-squared value, there are a number of significant independent variables that have exploratory power. Firstly, Age of Stadium is a significant independent variable that supports the notion that profitability will increase if there is a newer stadium because expenses will be decreased in a new facility. Similarly, Local Hero is significant, which shows that the more local heroes there are on a team the more profitability will increase because consumers are willing to attend games and spend more money. Most importantly, Competition Time is a significant independent variable that supports the notion that there is a relationship between competition time and profitability. More accurately, if there is a reduction in the amount of competition time then there may be an increase the profitability of teams in each league.

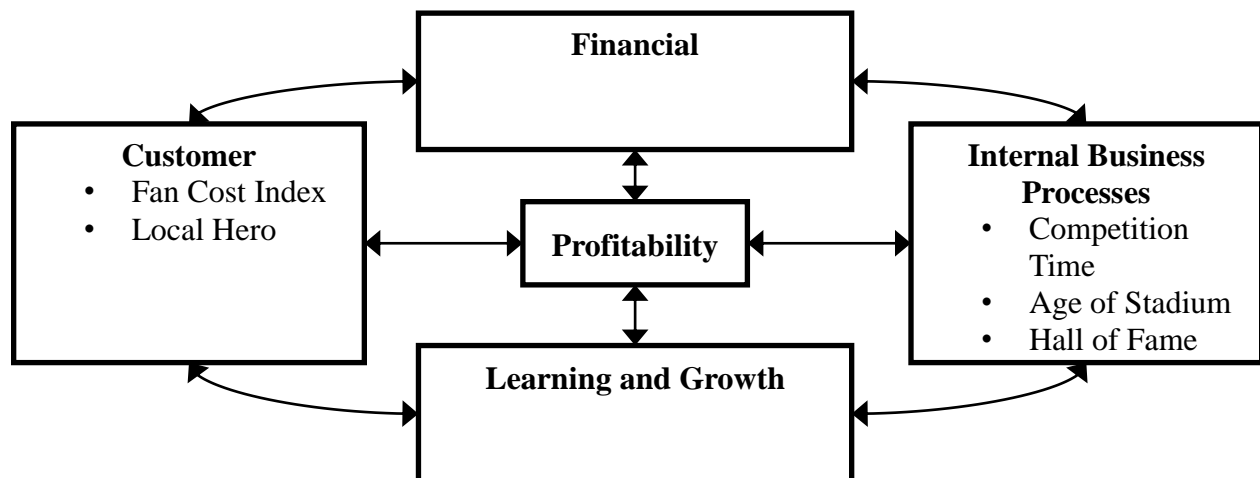


Figure 4. Model of the conceptual framework for team profitability

To help understand the interactions between the categories and variables within the model are further explained in Table 13.

Table 13.

*Description of interactions between categories in Figure 4*

Interaction	Variable	Category	Description	Description
1	Fan Cost Index	Financial	Fan Cost Index impacts profitability because the cost to attend games will change how much profitability a team will have.	Correlation Analysis, Table 8
2	Fan Cost Index	Internal Business Processes	The brands of teams can change how much they charge for tickets, which is a component of Fan Cost Index.	Hyatt, Sutton, Foster and McConnell (2013)
3	Fan Cost Index	Learning and Growth	By implementing dynamic strategies throughout the season, franchises can impact FCI to help increase profitability.	Mills and Rosentraub (2014)
4	Local Hero	Financial	Local Hero's can help increase the overall revenue of a team which in turn helps to drive the profitability of teams.	Correlation Analysis, Table 8
5	Local Hero	Internal Business Processes	Internal processes on how to manage acquiring or keeping a local hero on a franchise can help increase profitability or potentially decrease profitability if local hero's are traded.	Nadeau and O'Reilly (2006)
6	Local Hero	Learning and Growth	Local hero's are important for the learning and growth as a team because if a franchise can build around a local hero they have the potential to increase ticket prices and other revenue streams that will increase profitability.	Nadeau and O'Reilly (2006)
7	Competition Time	Learning and Growth	Competition time is important to learning and growth because if competition were to change	Correlation Analysis, Table 8

			then franchises need to adapt strategies to maximize profitability.	
8	Competition Time	Customer	A change in competition time is important for consumers because it creates a supply and demand effect where they are willing to pay more to attend games because there are less opportunities to see their favourite franchise.	Correlation Analysis, Table 8
9	Competition Time	Financial	Competition time shares a relationship with the financial category because if there is less competition time, franchises can potential increase revenue drivers that would in turn increase profitability.	Correlation Analysis, Table 8
10	Age of Stadium	Learning and Growth	As the age of stadiums increase new strategies need to be learned in order keep fans interested in returning to old stadiums.	Miller (2009)
11	Age of Stadium	Customer	Customers appreciated new stadiums where the amenities and attractions are plentiful, rather than older stadiums that are rundown and offer little entertainment value.	Miller (2009)
12	Age of Stadium	Financial	As stadiums increase in age owners must spend more to maintain them, which decreases the profitability. New stadiums help to increase profitability.	Correlation Analysis, Table 8
13	Hall of Famers	Learning and Growth	Learning from Hall of Famers and using their knowledge to help a franchise grow is important and help increase profitability through special events.	O'Reilly and Nadeau (2006)
14	Hall of Famers	Customer	Utilizing Hall of Famers to interact customers and provide them with opportunities to come to games and meet Hall of Famers helps drive	O'Reilly and Nadeau (2006)

			profitability value, as customer will spend more money while at the arena/stadium.	
15	Hall of Famers	Financial	Hall of Famers help drive profitability of franchises because they bring history and class to franchises that resonates with multiple customer groups.	Correlation Analysis, Table 8

**Discussion and Conclusions**

Competition time has yet to be studied in professional sport research. This research aimed to determine if competition time has an effect on team valuation, revenue and profitability. The research used a long-standing business framework to shape the conceptual development. A framework like the Balanced Scorecard is seldom, if ever, used in professional sport and as such it provided a unique context to study a new idea. As such, the results of this study help to understand competition time and its effect on professional sport finances as well as provide a better understanding as to how to use the Balanced Scorecard in professional sport. Since this study is largely empirical, the outcomes are driven by the results reported.

Up until this point there has been no indication that there is a relationship between the number of games played and professional sport finances. It was assumed that the NFL generates the most revenue and the highest team values because it is the most popular sport in America. Also, Canadian teams have higher revenue and profits than those in the US because hockey is more popular in Canada. However, there is now evidence that would support a statistical relationship between competition time and professional sport finances. The conceptual models shown in Figure 2, 3 and 4 begin to explain this relationship.

As competition time begins to increase, team value, revenue and profitability all begin to decrease. Past research done by Nadeau and O'Reilly (2006) determined that professional sport

revenue is generated through five channels and include gate receipts, concessions, media revenue, merchandise sales and revenue sharing. As Figure 3 shows, competition time may now also be included in that discussion as a strategy to increase revenue at the league level.

When applying this to the Balanced Scorecard framework, competition time is an internal business practice that will help shape the other three categories of the scorecard. As competition time is tested it will have a direct impact on the financial category and how goals will need to be changed in order to satisfy customers, which will lead to learning and growth for the leagues.

DMA Homes was another variable that was taken from the data reduction in support of professional sports, which supports previous research completed by (Tainsky & Jasielc, 2014). However, DMA Homes only played a factor in the valuation model suggesting that market size will have no impact on revenue and profitability as competition time is changed. This also suggests that consumers will continue to attend games despite market size differences. This is important for team executives because ticket prices and concessions will not have to be changed to account for a change in attendance.

ESPN Total Rank is a variable that describes fan satisfaction and thought to be of importance especially because consumers are a specific section of the Balanced Scorecard. Fan satisfaction is also important to professional sports as it leads to increased revenue because fans are willing to attend games and spend more money (Larson & Steinman, 2009). As this variable did not play a factor in the final models, it suggest that a change in competition time will not have an impact on fan satisfaction which means that consumers will still be willing to purchase tickets and merchandise despite the amount of competition time. However, developing a scale that would test the satisfaction of fans as competition time changed would be of interest. By determining a threshold for the number of games before fans become uninterested because they

are not getting enough bang for the buck would be beneficial to league and franchise executives. It would be beneficial to league and franchise executives because it would provide another layer of data to inform their decisions on changing competition time. Now it is not only a financial question, but they have brought in the fans which they would appreciate and therefore may be more receptive to change.

Winning has long been important in sport and often considered to be one the most important factors. The research indicates that the effect of winning is not great for changing team valuation and profitability. There is however an indication that winning year over year does have a positive effect on revenue, which means that teams will begin to generate more revenue as they continuing to succeed as previously noted by Késenne, 2000.

Playoff appearance, another indicator of success, does not have any effect on team value, revenue and profitability. This does challenge the assumption that as teams progress in the playoffs they are able to generate more revenue via ticket revenue, concessions and merchandise sales (Nadeau & O'Reilly, 2006). The reverse is that as teams progress in the playoffs there are more expenses associated such as personal costs, travel and stadium maintenance. Future research would add specific variables that would track the revenue generated during the playoffs versus revenue generated in the regular season.

The internal business process section of the Balanced Scorecard is primarily about shaping and enhancing the brand of a team. Brand value and brand equity are important aspects of professional sport originally studied by Aaker (1991) and Keller (1993) and further developed for sport by Gladden and Funk (2002). While Forbes brand value was not a component of the conceptual models, there are still other components that explain why brand is important for revenue and profitability, especially when changing competition time. Components include Age

of Stadium and Hall of Famers both of which are strong indicators of brand. In sport, Hall of Famers are players who have had successful careers that have resulted in them being nominated to their leagues Hall of Fame. Each player inducted increases the brand value of the team because these players have helped generate revenue by attracting consumers to the stadium. The age of a stadium has also been shown to be a predictor of brand strength and value (Gladden & Funk, 2002). Age of Stadium is an important influencer of brands and must be considered when implementing the Balanced Scorecard. As the age of a stadium increases, the facilities become less desirable to consumers because the stadium looks dated and lacks the proper amenities of a new stadium. While the age of a stadium does have an influence on the amount of revenue and profitability, there is no change to team valuation, which challenges literature and practical assumptions. However, a change in competition time, specifically a reduction would reduce the stress on older stadiums, and would in turn increase team valuation, revenue and profitability.

As mentioned, the Balanced Scorecard was used to guide the empirical research and develop models for team valuation, revenue and profitability. The Balanced Scorecard is a commonly used tool in industry as means to set goals, identify areas that need attention and provide tracking, which will lead to a better business (Kaplan & Norton, 1996b). Of the four categories in the Balanced Scorecard, internal business processes and consumers are the two most commonly used categories. Internal business processes commonly refers to the brand management of an organization with the goal to strength the brand. Consumers are more obvious in that the category is reserved for catering to the consumer and ensuring they have access to the best possible product. The fact that these two categories are the most commonly used in the conceptual models supports literature that says consumers and the brand are vitally important to professional sport (Gladden & Funk, 2004, Kellison & Kim, 2014). The other two categories of

the Balanced Scorecard are not as commonly used and they include financial and learning and growth.

The reason for a lack of financial indicators is because the variables that would be commonly used for the financial category are the dependent variables of this study. If there were to be other dependent variables than the Forbes variables would all be placed in this category and goals would be set to maximize their potential. In order to grow the leagues, the financial category is expected to increase revenue and profits. Since valuation, revenue and profitability are three of the main indicators of financial success in professional it is difficult to expand to other factors that could have been analyzed. Looking at the cost implications of Fan Cost Index and the fan investment developed in Mini-Study 6 could be an alternative to the financial category. However, in order to analyze these two variables, further investigation into the differences between the two is needed. However, from a financial standpoint it is recommended that valuation, revenue and profitability be used moving forward, especially in sport management.

Fan Cost Index (FCI) is a commonly used metric in sport management, both in academia and professional settings. It provides an overview of how much a family of four pays to attend a specific team's game (Nadeau & O'Reilly, 2006, Hyatt et al, 2013). While FCI has become a standard measure and it does provide a very good basis for how much a family spends it does miss the mark on how much just one fan spends at a professional sporting event. For example, of all the people attending games it is not guaranteed that they are all families of four. Using this as an example, the fan investment ratio developed in Mini-Study 6 provides a first look at determining how much just one fans invests when attending a professional sports game. This could be extremely useful for practitioners of sport management and franchise executives alike.

Breaking down the cost of each individual fan will help executives determine price points for all aspects of professional sport from ticketing to concessions. By determining price points for one fan rather than a family, franchises will be able to target specific fan cohorts. An interesting extension of this thought is applying the new ratio to the popular strategy of dynamic ticket pricing.

Dynamic ticket pricing is a relatively new phenomenon in professional sport where teams will change the price of tickets depending on the opponent facing the franchise on a certain day (Shapiro & Drayer, 2014). The ratio developed in Mini-Study 6 is important in this regard because executives can further develop dynamic ticket pricing to extend beyond ticketing and into concessions and potentially merchandise. The use of fan investment to develop these consumer strategies is still a new concept, but further development could lead to positive financial results for North American franchises.

The last category, which is learning and growth, is also not as common because it is usually reserved for helping maintain and grow the other three categories. This study revealed that year and country are both significant components of this category. In order to grow valuation, revenue and profitability leagues must be learning every year and applying different strategies to various countries, which will help maximize the financial components of professional sport. Learning and growth also has potential to be one of the most important categories of the BSC for league executives and practitioners. The reason for this category being one of the most important is because executives will be able to adjust the category for measures that are needed by their individual team. The importance of this is crucial when examining leagues who have 30 to 32 different teams all from different markets. Differences arise especially when looking at the NFL and the NHL/NBA. As seen in Mini-Study 1 the NFL is the most lucrative league and all teams succeed equally, largely in part to the league wide revenue

sharing (Bloom, 2014). Using this example it may be difficult for executives to adjust the BSC in the Learning and Growth category because each franchise does well financially. Conversely, if the same idea was transferred to the NHL and NBA as in seen in Mini-Study 3 where there are considerable differences between the best performing and the poorest performing teams (Brownlee, 2012). In this case the teams who regularly perform well will need different strategies to engage fans as opposed to the poor performing teams who will need completely different strategies such as deep discount on tickets or 2-for-1 deals. This construct provides a unique dynamic that only the BSC can provide because executives can adapt the model based on varying circumstances.

Together these four categories of the Balanced Scorecard will provide a context to help leagues increase team values, revenue and profitability hopefully by changing competition time as it shown to have an effect on all three dependent variables. Despite its lack of context in other sport management research, the Balanced Scorecard can start to be considered as an effective tool for developing models and providing business solutions for executives and practitioners.

Since the research is empirically based there are many next steps that can be taken to advance the understanding of competition time on professional sport finances. Firstly, the variables used in this study were adapted from previous research done by O'Shea (2011), O'Reilly and Nadeau (2006) and Foster et al (2014). The refinement and development of variables will be crucial to future research for not only sport management but other disciplines as well (Meenaghan, 2013). Specifically a larger set of competition time variables should be created to better understand the many levels of competition time. Options for new variables could include the amount of minutes played in a single game. A second option is to examine the amount of actual game time, which is quite different amongst the leagues.

Another step for future research is to include European leagues and determine if their team values, revenue and profits are also affected by competition time. This concept was first introduced in Mini-Study 5 as a means to show how the most powerful league in Europe operates as opposed to the major North American leagues. A lack of playoffs is an idea that is intriguing, but also difficult to see in a North American setting. However, taking ideas from the EPL and transferring them into some North American leagues could be of interest and ultimately lead to financial success for a league willing to take a shot. As described throughout the thesis only the four major leagues in North America were examined, but including other, smaller leagues in North America could be of interest. For example, including other leagues such as Major League Soccer, the Canadian Football League and the Women's National Basketball Association would create a stronger context for how competition time affects North American professional sport. By including the other leagues in North America, it will help to better understand the financial practices of leagues that do not get the same attention as the major four in North America. If there becomes a focus on making these smaller leagues more financially secure, it may attract more high-profile owners to join the leagues, which would help expand the profile. This would in turn increase the competition within markets, which could lead to enhanced strategies and better experiences for fans.

Despite there being a number of strengths in this study, there are weaknesses that should be mentioned. Firstly, when competition time is being discussed it not only has an effect on league structure, but also the players of the leagues. In a physically demanding sport, changing the amount of competition time may impact the performance of players. This was something that was not considered in this study, but future research could work towards understanding this concept through multidisciplinary research. However, player safety and health is of importance

to both owners and managers because the players represent one of the most important commodities to a franchise. As stated, changing the amount of competition time will have an impact on the health of players; with the potential for less competition time players will have more rest and therefore could perform at a higher level. This statement has been part of a recent discussion by professional athletes who feel that they play too many games per season and by the end of the season they are physical exhausted (Goff, 2014). Implications of this are especially important for managers and executives of professional sport because if they can extend the physical health of players they can sell more tickets for high performance games.

Secondly, while the Forbes data is sufficient to better understand competition time and its effects on league finances, real data from the leagues is preferred. Forbes data has been used in previous research such as Nadeau & O'Reilly (2006), and Scelles, Helleu, Durand & Bonnal (2013) however it is widely contested because of its accuracy. Some reports suggest that Forbes is close in determining franchise valuations on a year-to-year basis, while other say they are not even close. What also makes Forbes data difficult at times is the lack of availability of its methodology for determining the franchise value and other financial metrics. Despite its flaws, it is felt that this is still the best data available from a financial and professional sport perspective. While obtaining real data from individual franchises is ideal it is outside the control of the researcher as leagues are private and are under no obligation to release such information. To enhance future research it is suggested that researchers work to partner with professional sport franchises to obtain the most accurate data possible. Engaging in these partnerships would be difficult because researchers would need to take special care to maintain the autonomy of each franchise.

Next steps for the author are to prepare the thesis for journal submission. Due to the size of the data set and the empirical nature, the goal is to submit to the Journal of Sport Management. As this is a new area of sport management, research on the understanding of the effect of competition time on league finances is of importance to the sport management community.

Lastly, this research sets up a number of fascinating considerations for league executives and other sport management practitioners. Professional sport owners are always looking to make money and advance their sport. Using the conceptual models of this study, league executives can start to consider changing the number of games played per season to maximize revenue and profits and ultimately increase franchise values. By changing the number of games played, consumers may become more interested in the full season rather than the beginning and end. This would result in team and league executives increasing the price of tickets, concessions, merchandise sales and become more appealing to large TV networks. League executives will also have a better understanding of how to manage certain aspects of professional sport that will increase the finances of the league. The Balanced Scorecard is something that can be used by each team to track progress and make any changes necessary if their finances are not where they need to be.

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### Appendices

#### *Appendix A. Valuation, revenue and profitability of NFL Teams for 2012 and 2013*

	Valuation	Revenue	Profitability	Valuation	Revenue	Profitability
	'13	'13	'13	'12	'12	'12
Arizona Cardinals	961	253	9.7	922	246	20.5
Atlanta Falcons	933	252	18.5	837	239	15.3
Baltimore Ravens	1227	292	48.3	1157	279	48.6
Buffalo Bills	870	256	12.6	805	240	29.4
Carolina Panthers	1057	271	28.9	1048	269	11.5
Chicago Bears	1252	298	63.2	1190	286	65.3
Cincinnati Bengals	924	250	37.3	871	235	18.1
Cleveland Browns	1005	264	17.1	987	258	28.7
Dallas Cowboys	2300	539	250.7	2100	500	226.7
Denver Broncos	1161	283	31.7	1132	276	49.3
Detroit Lions	900	248	-3.5	855	231	-4.6
Green Bay Packers	1183	282	54.3	1161	276	43.1
Houston Texans	1450	320	81.5	1305	304	61.9
Indianapolis Colts	1200	276	65	1154	268	62.6
Jacksonville Jaguars	840	260	15.5	770	238	29.6
Kansas City Chiefs	1009	245	15	1008	259	46.4
Miami Dolphins	1074	268	24.8	1060	265	14.5
Minnesota Vikings	1007	234	28	975	227	7.2
New England Patriots	1800	408	139.2	1635	380	118.8
New Orleans Saints	1004	276	22.2	971	259	37
New York Giants	1550	338	64.4	1468	326	59
New York Jets	1380	321	52.8	1284	299	27
Oakland Raiders	825	229	19.1	785	226	-15.2
Philadelphia Eagles	1314	306	47.8	1260	296	48.2
Pittsburgh Steelers	1118	266	28.3	1100	266	-0.8
San Diego Chargers	949	250	30.4	936	246	22.5
San Francisco 49ers	1224	255	10.2	1175	245	30
Seattle Seahawks	1081	270	28.2	1040	260	16.4
St Louis Rams	875	239	21.1	780	231	6.7
Tampa Bay Buccaneers	1067	267	2.2	1033	258	44.1
Tennessee Titans	1055	270	40	1011	262	38.8
Washington Redskins	1700	381	104.3	1600	373	109

*Appendix B. Valuation, revenue and profitability of MLB Teams for 2012 and 2013*

	Valuation	Revenue	Profitability	Valuation	Revenue	Profitability
	'13	'13	'13	'12	'12	'12
Arizona Diamondbacks	585	192	-5.8	584	195	7.6
Atlanta Braves	730	253	38.4	629	225	12.4
Baltimore Orioles	620	198	1.6	618	206	30.1
Boston Red Sox	1,500	357	25.3	1,312	336	23.9
Chicago Cubs	1,200	266	27.3	1,000	274	32.1
Chicago White Sox	695	210	-2.7	692	216	22.9
Cincinnati Reds	600	209	-11.6	546	202	20.9
Cleveland Indians	570	196	-1.9	559	186	22.9
Colorado Rockies	575	197	13.7	537	199	18.7
Detroit Tigers	680	262	7.5	643	238	-0.4
Houston Astros	530	186	55.9	626	196	24.7
Kansas City Royals	490	178	-6.5	457	169	16.3
Los Angeles Angels of Anaheim	775	253	5.8	718	239	-12.9
Los Angeles Dodgers	2,000	293	-80.9	1,615	245	3.2
Miami Marlins	500	159	-8	520	195	-7.1
Milwaukee Brewers	565	197	6.8	562	201	9
Minnesota Twins	605	221	30.2	578	214	10.8
New York Mets	800	238	1.6	811	232	-2.4
New York Yankees	2,500	461	-9.1	2,300	471	1.4
Oakland Athletics	495	187	27.4	468	173	27.5
Philadelphia Phillies	975	265	-20.9	893	279	0.6
Pittsburgh Pirates	572	204	21.8	479	178	26.8
San Diego Padres	615	207	33	600	189	29.9
San Francisco Giants	1,000	316	53.3	786	262	17.6
Seattle Mariners	710	210	5.3	644	215	12.9
St. Louis Cardinals	820	283	65.2	716	239	19.9
Tampa Bay Rays	485	181	15.3	451	167	10
Texas Rangers	825	257	-4.9	764	239	-8.7
Toronto Blue Jays	610	218	-14.9	568	203	-4.8
Washington Nationals	700	244	22.4	631	225	28.4

*Appendix C. Valuation, revenue and profitability of NBA Teams for 2012 and 2013*

	Valuation	Revenue	Profitability	Valuation	Revenue	Profitability
	'13	'13	'13	'12	'12	'12
Atlanta Hawks	425	119	-3.6	316	99	-18.7
Boston Celtics	875	169	46.8	730	143	18.7
Brooklyn Nets	780	190	-19	530	84	-16.6
Charlotte Bobcats	410	115	7	315	93	-13.3
Chicago Bulls	1,000	195	52.2	800	162	34.2
Cleveland Cavaliers	515	145	10.8	434	128	18.6
Dallas Mavericks	765	162	37.5	685	137	13
Denver Nuggets	495	124	8	427	110	12
Detroit Pistons	450	139	10.3	400	125	7.7
Golden State Warriors	750	160	43	555	127	29.1
Houston Rockets	775	191	63.7	568	135	26.6
Indiana Pacers	475	121	11.6	383	98	10.9
Los Angeles Clippers	575	128	15	430	108	9.1
Los Angeles Lakers	1,350	295	66.4	1,000	197	47.8
Memphis Grizzlies	453	126	11.2	377	96	-12.5
Miami Heat	770	188	29.2	625	150	14.9
Milwaukee Bucks	405	109	11.5	312	87	-0.5
Minnesota Timberwolves	430	116	-2.7	364	96	-4.5
New Orleans Hornets	420	116	11.2	340	100	3.3
New York Knicks	1,400	287	96.3	1,100	243	83.2
Oklahoma City Thunder	590	144	33.3	475	127	29.9
Orlando Magic	560	139	12.3	470	126	12
Philadelphia 76ers	469	117	-3.8	418	107	-0.8
Phoenix Suns	565	137	28.2	474	121	13
Portland Trail Blazers	587	140	30	457	117	-10.1
Sacramento Kings	550	115	12.5	525	96	2.6
San Antonio Spurs	660	167	39.4	527	135	14.7
Toronto Raptors	520	149	28.8	405	121	18.8
Utah Jazz	525	131	17.5	432	111	12.1
Washington Wizards	485	122	7	397	102	1.7

*Appendix D. Valuation, revenue and profitability of NHL Teams for 2012 and 2013*

	Valuation	Revenue	Profitability	Valuation	Revenue	Profitability
	'13	'13	'13	'12	'12	'12
Anaheim Ducks	300	73	-3.9	192	91	-10.8
Boston Bruins	600	114	18.5	348	129	14.2
Buffalo Sabres	250	76	-1	175	95	-10.4
Calgary Flames	420	89	11.5	245	117	11
Carolina Hurricanes	187	71	-3.4	162	85	-9.4
Chicago Blackhawks	625	115	25.6	350	125	20.5
Colorado Avalanche	337	67	0.3	210	91	4.5
Columbus Blue Jackets	175	69	4.9	145	85	-18.7
Dallas Stars	333	79	1.6	240	100	3
Detroit Red Wings	470	96	10.5	346	128	20.8
Edmonton Oilers	400	80	10.3	225	106	16.2
Florida Panthers	240	69	-7.7	170	87	-12
Los Angeles Kings	450	98	8.2	276	120	1.8
Minnesota Wild	330	81	-13.6	218	99	-3.9
Montreal Canadiens	775	127	29.6	575	169	51.6
Nashville Predators	205	71	-0.8	167	88	-3.4
New Jersey Devils	320	78	-4.2	205	122	2.8
New York Islanders	195	61	-1.2	155	66	-16
New York Rangers	850	131	27.3	750	199	74
Ottawa Senators	380	83	6.8	220	113	14.5
Philadelphia Flyers	500	95	6	336	124	10.9
Phoenix Coyotes	200	67	-8.9	134	83	-20.6
Pittsburgh Penguins	480	107	20.9	288	120	9.1
St Louis Blues	405	84	2.1	223	101	-0.9
San Jose Sharks	185	72	-2.5	130	89	-10
Tampa Bay Lightning	180	72	-5.4	174	88	-13.1
Toronto Maple Leafs	1,150	142	48.7	1,000	200	81.9
Vancouver Canucks	700	101	15.8	342	143	30.4
Washington Capitals	414	83	8	250	106	-1
Winnipeg Jets	340	79	6.3	200	105	13.3

*Appendix E. Independent Variables: Operation and Data Sources of Pooled Sample (n=1219)*

#n	Variable	Operation	Source
1	Year	Numerical indicator to represent the year of each season	Research created variable
2	League	Numerical indicator (1 for NBA, 2 for MLB, 3 for NHL and 4 for NFL) to represent each league	Research created variable
3	Country	Binomial (1 or 2) indicator of whether a team is from Canada or the United States	Team websites
4	All-Star Total	Total number of all-star nominees in the current season	League websites, basketball-reference.com, baseball-reference.com, hockey-reference.com, pro-football-reference.com
5	Star Trophy Total	Total number of major awards won in the current season	League websites, basketball-reference.com, baseball-reference.com, hockey-reference.com, pro-football-reference.com
6	Local Hero Effect	Binomial (1 or 0) indicator of whether a team has a local player on the current roster	League websites, basketball-reference.com, baseball-reference.com, hockey-reference.com, pro-football-reference.com
7	Playoff Appearance	Binomial (1 or 0) indicator of whether a team advanced to the playoffs in the current season	League websites, basketball-reference.com, baseball-reference.com, hockey-reference.com, pro-football-reference.com
8	Playoff Progression	Progressive weighting points-based variable measuring post-season success	Research-created variable
9	Defending Champion	Binomial (1 or 0) indicator of whether a team is the defending champion	League websites
10	Title Weighting	Progressive weighting	Research-created

		points-based variable measuring how recent a team has won their league championship	variable
11	Current Season Winning %	Current year regular season winning percentage	ESPN, League websites
12	Previous Season Winning %	Prior year regular season win percentage	ESPN, League websites
13	Winning % Change	Change from previous year regular season win percentage	ESPN, League websites
14	Game Importance	Weighted variable, 1 all important, 2 some important, 3 no important	Research-created variable
15	Playoff Contention	Total number of games played before falling out of playoff contention	Research-created variable
16	Age of Team	Total age of team since formation	Team websites
17	Time in Current Market	Number of years a club has been in their current DMA	Research-created variable
18	Total Championships – All Years	Total number of team championships	ESPN
19	Hall of Famers	Total number of players inducted to the league(s) hall of fame	League websites, basketball-reference.com, baseball-reference.com, hockey-reference.com, pro-football-reference.com
20	Retired Jerseys	Total number of retired jerseys	League websites, basketball-reference.com, baseball-reference.com, hockey-reference.com, pro-football-reference.com
21	Attendance % of Capacity	Attendance as a percentage of the stadium/arena total capacity	ESPN, USA Today
22	Raw Attendance	Club total raw attendance (home games)	League websites, basketball-reference.com, baseball-reference.com, hockey-reference.com, pro-football-reference.com
23	Age of Stadium	Age of the current stadium/arena	League websites, basketball-reference.com, baseball-reference.com, hockey-reference.com, pro-football-reference.com

24	Average Household Income	Median household income within team DMA	Canada and US Census
25	DMA - Homes	Size of the team's DMA in the current season	Nielsen
26	Teams in Market – All Pro	Number of teams from all professional sport leagues within single DMA	League websites, basketball-reference.com, baseball-reference.com, hockey-reference.com, pro-football-reference.com
27	Teams in Market - League	Number of same league teams within single DMA	League websites, basketball-reference.com, baseball-reference.com, hockey-reference.com, pro-football-reference.com
28	Merchandise Sales	Percentage team rank for current season	NHL
29	Player Salaries	Sum of all player salaries in the current season	ESPN, USA Today
30	Ownership	Binomial variable (1 or 2) that indicates the type of ownership for a given team	Forbes
31	Forbes - Valuation	Forbes variable that measures total valuation of the team	Forbes
32	Forbes - Revenue	Total team revenue	Forbes
33	Forbes – Profitability	Forbes variable that measures net profit/loss of the team	Forbes
34	Forbes – Brand Value	Forbes variable that measures the total brand value of the team	Forbes
35	ESPN - Total Rank	Cumulative fan satisfaction variable the measures public perception of professional sport teams	ESPN
36	ESPN – Stadium Experience	Fan satisfaction variable that measures the experience of attending a game at a teams stadium/arena	ESPN
37	ESPN – Bang for the Buck	Fan satisfaction variable that measures the amount of revenue generated based on the number of games won in a season	ESPN
38	ESPN – Fan Relations	Fan satisfaction variable	ESPN

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		that measures a fans perception on how they are treated by my players, coaches and management	
39	ESPN – Loyalty	Fan satisfaction variable that measures a fans perception of how they are treated by ownership	ESPN
40	ESPN – Affordability	Fan satisfaction variable that measures the cost of attending a game for a professional sports team	ESPN
41	Fan Cost Index	Average cost for a family of four to attend a professional sports game	Team Marketing Report
42	RSN Ratings: Relative % of DMA Market	Team percent share of total DMA ratings	Nielsen
43	NFL	Binary variable indicating the NFL versus the other leagues	Research-created variable
44	MLB	Binary variable indicating the MLB versus the other leagues	Research-created variable
43	Pre-Post Lockout	Nominal coding of NHL seasons based on the last league lockout	League website
44	Ratio 1 – Frev/CT	Revenue generated per competition time	Research-created variable
45	Ratio 2 – Fprofit/CT	Profit generated per competition time	Research-created variable
46	Ratio 3 – Frev/Ffranchisevalue	Revenue generated as function of team value	Research-created variable
47	Ratio 4 – Fprofit/Frev	Profit margin	Research-created variable
48	Ratio 5 – TA*(FCI/4)/CT	Fan spending per competition time	Research-created variable
49	Competition Time	Number of regular season games in the current season	League websites

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*Appendix F. Full factor analysis results, including the 14 components with an Eigenvalue > 0.8*

	Component													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Year	.009	.010	.084	.008	-.035	.160	.110	.055	.015	-.008	.898	-.127	-.005	.049
1=NBA, 2=MLB, 3=NHL, 4=NFL	-.811	.035	-.130	-.094	.050	.089	-.115	.185	.085	.027	.041	.214	.073	.202
Country	.022	-.015	.074	.053	-.187	-.126	.024	.863	-.024	-.036	-.014	.034	-.099	-.063
All Star Total	-.280	.148	-.068	.365	-.005	.537	-.121	-.012	-.041	.135	.014	.184	.132	.232
Star Trophy Total	.041	.045	-.053	.255	-.023	.042	-.002	-.077	.120	.036	.002	-.009	.852	.024
Local Hero	-.012	.049	.037	-.012	-.104	.242	.105	.065	.041	-.047	-.101	.816	-.021	.035
Playoff Appearance	.013	.048	-.194	.851	.036	-.038	.127	-.010	.011	.018	.030	-.032	.131	-.052
Playoff Progression	.031	.113	-.170	.678	.019	.058	.057	-.015	-.097	.150	-.019	-.017	.402	-.044
Defending Champ	.004	.059	-.082	.054	.018	.031	.006	-.010	-.021	.924	.006	-.006	-.111	-.007
Title Weighting	.027	.168	-.171	.202	.045	.041	.094	-.044	-.126	.727	-.003	-.049	.377	-.022
Win Percent Current	.079	.005	-.119	.815	-.051	.225	.205	.012	.142	.083	.096	.078	.019	.099
Win Percent Previous	.001	.033	-.145	.315	-.040	.219	.011	.005	-.791	.114	.070	-.013	-.086	.023
Win Percent Change	-.067	-.006	.056	.335	-.033	.116	.101	-.027	.835	-.016	.053	.020	.031	-.027
Game Importance	.080	-.061	.372	-.709	-.071	.074	.140	-.099	.020	-.017	.056	.024	.025	.017
Playoff Contention	.913	.164	.012	.055	.042	.158	-.157	.065	.066	.018	.020	.113	.014	.072
Age Of Team	.127	.874	.056	.007	.060	.224	-.121	-.120	.042	.037	.071	.032	.001	.102
Time In Current Market	-.017	.832	.056	-.012	.049	.259	-.025	-.114	.044	.048	.075	-.059	.030	.149
Total Championships	.005	.726	-.044	.080	.108	.001	.213	.245	-.097	.077	-.044	.086	.081	.000
Hall of Fame	.054	.903	.023	.007	.112	.011	-.041	.126	.019	.051	.010	.066	.052	.086
Retired Jersey	.188	.803	.054	.113	.049	.015	.082	-.172	-.054	.012	-.037	-.007	-.052	-.029

COMPETITION TIME

Attendance Percent Capacity	-.306	-.010	.064	.269	-.050	.110	.736	-.051	.084	.064	.036	.082	-.011	.119
Raw Attendance	.678	.281	-.058	-.057	.110	.472	-.136	.030	.044	.031	-.024	.258	.038	.118
Age Of Stadium	.012	.293	.129	-.004	.156	.111	.078	-.068	-.050	-.030	.039	.029	.015	.819
Household Income	.018	.152	.175	.113	.241	-.272	-.045	-.286	-.088	.035	.527	.461	.007	-.061
DMA Homes	.054	.102	.096	.050	.925	.039	.065	.029	-.011	.002	.002	-.081	-.035	.023
Teams In Market All Pro	.013	.142	.157	.012	.902	.035	-.031	.006	-.010	.012	.006	.006	.012	.052
Teams In Market League	.072	.082	-.003	-.040	.787	.028	-.004	-.453	.042	.052	.019	.011	.008	.109
Merchandise Sales	-.060	-.107	-.255	-.020	.149	-.682	-.023	.476	.013	.022	.140	-.019	.090	.108
Player Salaries	-.204	.285	-.003	.028	.131	.753	.186	-.101	-.041	.040	.212	.122	.039	.137
ESPN Total Rank	.026	.085	.840	-.296	.120	-.017	.193	.059	.072	-.086	.023	.052	-.036	-.011
ESPN Bang For Buck	.097	.155	.508	-.357	.199	.025	.467	.138	.135	-.040	.025	.110	.053	-.068
ESPN Fan Relation	-.083	.070	.823	-.273	.027	.169	.018	-.047	-.010	-.090	.087	.032	-.058	-.095
ESPN Loyalty	.097	-.040	.794	-.302	.013	.000	-.158	-.093	.148	-.092	.043	-.006	-.041	.056
ESPN Affordability	-.209	.210	.556	-.028	.265	.112	.366	.226	-.115	.033	.131	.086	.066	-.130
ESPN Stadium Experience	-.125	-.056	.792	.063	.053	-.106	.013	.016	.030	-.017	-.017	-.045	-.043	.249
Ownership Type	-.682	-.026	.138	.000	.001	.358	-.122	.172	.061	-.060	-.056	.032	-.106	-.085
Forbes Brand Value	-.010	.350	-.046	.066	.291	.585	.327	.107	-.099	.024	.193	.109	.109	-.015
Fan Cost Index	-.563	.050	.251	.164	.036	.141	.562	.067	.040	.087	.267	-.008	.002	.014
RSN	.866	-.015	-.056	.022	.065	-.380	-.040	.154	-.047	-.005	.057	-.123	.003	-.065
Competition Time	.912	.163	-.029	-.084	.057	.095	-.284	.080	.014	.006	-.005	.081	.019	.038

*Appendix G. Univariate Spearman correlation analysis for the three dependent variables and competition time*

	Spearman			
	Forbes Valuation	Forbes Revenue	Forbes Profitability	Competition Time
Year	.289**	.298**	.063*	-.062*
League	.369**	.335**	.257**	-.642**
Country	-.188**	-.172**	.015	.049
All Star Total	.498**	.570**	.285**	-.095**
Star Trophy Total	.065*	.085**	.042	.075**
Local Hero	.287**	.333**	.253**	-.003
Playoff Appearance	.045	.011	.031	-.065*
Playoff Progression	.078**	.059*	.066*	-.042
Defending Champ	.058*	.059*	.059*	.004
Title Weighting	.096**	.109**	.063*	.028
Win Percent Current	.151**	.146**	.111**	-.027
Win Percent Previous	.131**	.119**	.048	-.031
Win Percent Change	.058*	.062*	.072*	-.009
Game Importance	.032	.049	.000	.066*
Playoff Contention	-.281**	-.062*	-.164**	.906**
Age of Team	.433**	.483**	.307**	.101**
Time in Current Market	.512**	.540**	.310**	-.026
Total Championships	.325**	.374**	.337**	.074**
Hall of Famers	.298**	.343**	.257**	.109**
Retired Jersey	.173**	.220**	.154**	.258**
Attendance Percent Capacity	.284**	.132**	.191**	-.548**
Raw Attendance	-.132**	.093**	-.024	.843**
Age of Stadium	.183**	.179**	.045	-.002
Household Income	.072*	.072*	.014	.074*
DMA Homes	.120**	.128**	.026	.108**
Teams in Market All Pro	.117**	.137**	.055	.094**
Teams in Market League	.151**	.168**	.007	.117**
Merchandise Sales	-.654**	-.656**	-.403**	.015
Player Salaries	.825**	.850**	.293**	-.254**
ESPN Total Rank	.052	.057*	.062*	.018
ESPN Bang For Buck	.100**	.109**	.104**	.060*
ESPN Fan Relation	.250**	.243**	.118**	-.085**
ESPN Loyalty	-.088**	-.039	-.007	.122**
ESPN Affordability	.338**	.287**	.205**	-.214**
ESPN Stadium Experience	.015	-.023	.035	-.145**
Ownership Type	.480**	.409**	.320**	-.552**
Forbes Valuation	1.000	.924**	.598**	-.428**

Forbes Revenue	.924**	1.000	.589**	-.191**
Forbes Profitability	.598**	.589**	1.000	-.248**
Forbes Brand Value	.844**	.790**	.512**	-.180**
Fan Cost Index	.516**	.358**	.327**	-.735**
RSN	-.341**	-.208**	-.244**	.791**
NFL	.708**	.603**	.442**	-.812**
MLB	.058*	.303**	.049	.795**
Pre-Post Lockout	-.634**	-.626**	-.362**	.024
Ratio1	.873**	.741**	.530**	-.709**
Ratio2	.677**	.604**	.924**	-.509**
Ratio3	-.670**	-.408**	-.332**	.667**
Ratio4	.450**	.420**	.953**	-.185**
Ratio5	.801**	.726**	.489**	-.596**
Competition Time	-.428**	-.191**	-.248**	1.000

\*\*p < .01 \*p < .