The Effect of Managerial Decisions on Sport Resources Over On-Field

Performance in European Soccer Clubs

by

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ABSTRACT

The Effect of Managerial Decisions on Sport Resources Over On-Field Performance in European Soccer Clubs

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This thesis investigates the relationship between sport resources and on-field performance in European soccer clubs. Utilizing a data set from English Premier League, German Bundesliga, Italian Serie A, and Spanish La Liga that combines indicators of financial, human, relational, informational and organizational resources, this empirical study is based on exploratory factor analysis followed by two structural equation modeling equations. The analysis indicates that financial resources were ranked first in influence over on-field performance followed by relational resources, human resources, and informational resources respectively. One interpretation of this is that rich clubs participating in European open league system will more likely dominate on-field results conditional on the successful management of coaches, players, and relationship between them to provide a better utilization of financial spending. The implications of this micro-level study will provide soccer managers of European clubs a systematical approach to prioritize sport resources and study their effect over on-field performance. Other potential wider implications will be discussed related to the development of profitability, sponsorship and fan growth of European clubs in relation to on-field performance.

Keywords: sport resources, resource-advantage theory, on-field performance, sport management, prioritization, ranking, European clubs

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To 'My Cousin' - Dareen (Rest In Peace-RIP)

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1   Introduction

The primary goal for sport team managers is to enhance on-field performance as an important indicator of managerial outcomes. They face various challenges to keep their clubs continuously participate at the first division leagues in Europe. One of these challenges is to manage sport resources correctly in order to produce an acceptable or superior on-field performance. One significant question that is frequently raised by soccer managers is, how can I prioritize or rank these resources according to importance? This thesis capitalizes on two research domains of the resources advantage theory and more specifically sport resource management literature, in order to investigate the relationship between sport resources and on-field performance in European soccer clubs. It examines the ranking or prioritization effect of the financial, human, relational, informational and organizational sport resources to on-field performance. These relationships are explored in the specific context of four major European soccer leagues. These are English Premier League, German Bundesliga, Italian Serie A, and Spanish La Liga from 2009 until 2014.

This thesis employed exploratory factor analysis (EFA) to first reduce the set of sport resource indicators and eliminate multicollinearity among them. Secondly, two structural equation modeling (SEM) models were used to test the relationship between the latent factors of sport resources and on-field performance. The results concluded that financial resources are most influential over on-field success followed by the human resources of coaches and players and their relational resources highlighting the cohesiveness between coaches and players explained by the minutes and playing percentages of the starting eleven players. The next section will provide a summary of the valuation of sport industry and various objectives of professional sport teams.

1.1 Sports Industry and Objectives

Sport is a developing industry that is continuously evolving. The value of sport industry worldwide in 2015 was 1.5 trillion American dollars with 498 billion coming solely from the American sport industry (Plunkett Research, 2014). However, twenty years ago, the same industry was only worth 152 billion dollars in the United States. Professional sport organizations operate under the umbrella of the sport industry as one segment among many others such as sport tourism, governing bodies, high school and college sports, and amateur sports. By definition, winning teams are normally associated with higher on-field performance and is one of many important objectives of professional sport organizations (Bell, Brooks, Matthews and Sutcliffe, 2012; Samagaio, Couto, Caiado et al., 2009). Other objectives of professional sport teams include better profitability (Szymanski, 2003), improving brand image (Callejo and Forcadell, 2006), fan growth (Koenigstorfer, Groeppel-Klein and Kunkel, 2010; Adamson, Jones and Tapp, 2006), successful sport sponsorship agreements (Walliser, 2003) to name a few. The following will briefly highlight the linkages between these objectives and on-field performance.

1.2 Fan Growth

Fans attend sport matches, view them on media outlets such as television or online, purchase the teams' products (Carmichael, McHale and Thomas, 2011). They also invest heavily in tickets and concessions throughout the season (SportBusinessGroup and Jones, 2013). The growth of such fans is an extremely important objective that professional sport teams or organizations strive for (Koenigstorfer et al., 2010; Adamson et al., 2006). Sport marketing and management literature stressed that retaining and increasing the fan base is not limited to national boundaries, but rather stretches to international domains with television broadcasting of professional sports

competitions (Walliser, 2003). Soccer is considered a spectator sport where the sport product or service is being produced, distributed, and consumed by spectators or fans. They are the primary focus of sport teams under the sport entertainment domain (Walliser, 2003; Rottenberg, 2000). The connection between fan growth and the operation of sport teams economic model is heavily vested in attendance as a decisive driver (Koenigstorfer et al., 2010). The hopeful feeling for better on-field results always keep dedicated fans energized to continuously support sport teams (Kaplan, Nadeau and O'Reilly, 2011) or otherwise, why would sport fans invest their financial and emotional states into a losing team? (O'Reilly, Kaplan, Rahinel and Nadeau, 2008).

1.3   Profitability and Brand Value

Sport teams that participate in national sport leagues experience higher financial resources coming from the distribution of massive television broadcasting and sponsorship revenues for the major competitions they partake in (SportBusinessGroup and Jones, 2013; Walliser, 2003). Higher profitability and brand value come from teams participating in major European competitions such as Champions League and Europa League with continuous UEFA financial support during the course of such season-long tournaments (of European Football Associations-UEFA, 2012). Therefore, teams will improve the sales of gate tickets, and concessions commodities (SportBusinessGroup and Jones, 2013) during these European competitions. Within the level of European national leagues, it is no different. Sport teams compete to achieve higher on-field performances on various means such as relegations and promotions, and Champions and Europa Leagues seats as well. Both owners and team managers of these professional sport organizations understand the importance of winning in these major leagues, achieving promotion or avoiding relegation in order to continuously develop profit and brand value of sport teams (Samagaio et al., 2009).

1.4 Team Sponsorship

Successful sponsorship is heavily discussed in sport marketing and management literature as the new driver of promotion during sporting events or competitions (Amis, Pant and Slack, 1997). Sport fans come eagerly to support their respective teams, and a result, will view sponsorship advertising from team sponsors not as an exploitation effort but rather as huge financial and management commitments by sponsors to their beloved teams (Walliser, 2003). Therefore, fans will more likely also invest in the products of these sponsors out of team loyalty. What makes a sponsor want to invest in such team sponsorship agreements? It is the association with a winning team with a large fan base that will encourage sponsors to sit at the table and negotiate sponsorship contracts with professional sport organizations (Samagaio et al., 2009; Pinnuck and Potter, 2006). Higher on-field performance of sport teams during a given season will lead to more sponsorship agreements signed the following season (Smith, 2014).

1.5 Research Objectives

The list of overall objectives of professional sport organizations include, but is not limited to, profitability, brand image, fan growth, sponsorship and positive on-field performance. Why would a winning team matter to professional sport organizations? Higher on-field performance as an indicator of a winning team is important to the business objectives of professional sport organizations (Szymanski, 2003). Thus, the management of sport resources toward higher on-field performance will be the objective focus of this thesis. These sport resources under investigation will be financial, human, organizational, informational and relational resources (Hunt and Morgan, 2005). The primary objective of this empirical research is to prioritize (rank) the categories of resources (factors) or their relative importance based on the resource-

advantage theory framework. The central idea of this theory explains that firms can achieve competitive advantage and superior performance if they excel on the management of the seven categories of resources namely financial, human, relational, informational, organizational, physical and legal. Hunt and Morgan (2005, p. 194) encouraged future researchers to "focus their attention...on how R-A theory, its structure, and foundational premises can be *applied* to the practice of business [firms]". R-A theory generally explained that increasing competition will improve firm's performance. Thus, the management of resources within such a firm internally as well as studying competitor's strategies externally will be beneficial to improve performance. European sport teams operate as business entities participating in an open league system that allows for relegation and promotion to occur. As a result, competition becomes highly dynamic and important in order for such teams to continuously participate in first level European leagues. As a result, football managers can allocate potential future investments strategically across sport resources (factors) to improve on-field performance of football clubs. In other words, identify which categories of resources play major roles over others for higher on-field performance in European football. The second objective, which is prerequisite to the primary objective, is to build different predictive empirical models to examine the effects of resources' combination over on-field performance (Barney, 2014). This is consistent with research in sport literature to "suggests a myriad of factors [within] international major sport leagues" (Nadeau and O'Reilly, 2006, p. 311, 317) in relation to on-field performance.

1.6 Research Methodology

In order to understand the prioritization of sport resources and the managerial decisions around them to improve on-field performance, we need to know the resource structure of football clubs. Keeping these in mind, this empirical research included two steps. In the first step, an Exploratory Factor Analysis (EFA) will be used to

compress the original indicators of sport resources into few factors based on an R-A Theory structure and to eliminate multicollinearity. The data collection was based on a secondary quantitative data pool from valid sport sites such as Whoscored, Transfermarkt, ESPN, Sporting Intelligence, and World Football. The data of 78 European teams across 5 seasons, 2009-2014 was collected, categorized, and streamlined in the context of European football within R-A guidelines. The resources were compressed from the original 66 set to only 8 resource factors and analyzed by using factor analysis. The second step will use Structural Equation Modeling (SEM) through R analysis software to explain the association between on-field performance and football resources within European clubs, to rationalize the prioritization of such sport resource factors according to their relative influence to on-field performance.

1.7   Research Contributions

This research makes essential contributions to sport management/marketing literature in three definite ways: First, provide variable robust structures of sport resources for soccer teams and suggest which among them is considered to be the best predictive model to influence on-field performance, which can serve as a sport resources checklist for team managers looking for higher team success (Nadeau and O'Reilly, 2006). More specifically, which sport resources among financial, human, relational, informational and organizational have the highest influence over on-field performance. Hunt and Morgan (2005); Hunt and Rinaldo (2011) supported future research focusing on finding a classification structure of resources to show which category is ranked highest to yield greater firm performance. They explained that prioritization of resources will improve their allocation mechanism as a strategic management tool to gain competitive advantage. In a sport context, different aims of sport teams would require different combination of resources (acquired and/or used) (Tomkins, Riley and Fulcher, 2010). Therefore, prioritization of these resources is key to success. The

second contribution will be highlighting which categories, through the means of prioritization, play major roles on influencing on-field performance. Thirdly, this current study will contribute by looking at a *micro-level* analysis (managerial decisions) of resource prioritization among sport clubs instead of the *macro-level* of sport leagues discussed heavily within previous sport economics and strategy literatures especially in North American sport contexts. The previous sport macro-level research explained the retention and quality enhancement of sport competitions on topics such as design of sport leagues (Szymanski, 2003), competitive balance between sport teams within a league (O'Reilly et al., 2008), analysis of leagues' ownership rights, free agency of athletes and pre-season rookie draft (Szymanski, 2003; Rottenberg, 2000), and allocation of leagues' broadcasting revenues (Walliser, 2003). The management of relevant resources at the *club's* micro-level (i.e. resources available for *any team's* disposal) is yet to be empirically studied based on a theoretical framework such as the resource-advantage theory. Again, better managerial decisions about the use and prioritization of important resources within sport clubs would improve a club's on-field performance. Sport teams have different managerial goals to achieve within a season; thus, it requires different prioritization and allocation of resources to achieve different goals (Tomkins et al., 2010).

Why would a micro-level study of this nature be important to sport management/marketing literature? Wernerfelt (2014, p.23) answered, "in the absence of such a micro-foundation [study], it would be hard to build a broader body of theory and explore the boundaries of issues". Therefore, this research will add more depth to the resource prioritization research within sport context as a complementary management perspective to the macro-level.

1.8 Research Overview

Chapter 1 served as an introduction to the dissertation and provided a summary of the objectives of professional sport organizations in general and thesis research objectives in specific, methodology, and research contributions. Chapter 2 highlights the literature review of sport industry, sport economics, resource theories in marketing and management and lastly sport management and marketing. Chapter 3 will discuss the conceptual model and formulation of research questions addressed in this research. Chapter 4 explains and justifies the research methodology by focusing on the number and types of studies conducted, sample size, collection and data methods and analysis. Chapter 5 will present a comprehensive discussion on research findings from both EFA and SEM respectively and explain a thorough discussion on the effect of the models created in relation to on-field performance and provide a ranking of sport resources based on the basic objectives discussed above. Chapter 6 will be the discussion chapter that includes contributions, managerial implications, limitations and future research directions.

2 Literature Review

The literature chapter will cover four domains: 1) Review of the general sport literature in previous research, 2) Discussion of sport economics in sport literature, 3) Comprehensive examination of relevant resource theories with focus on R-A theory; and finally an investigation of sport management and marketing literature that discuss the nature of sport management and more specifically sport marketing, in light of sport resources within sport studies and their relationship to on-field performance.

The following will highlight the concept of sport, sport industry, and sport economics.

2.1 Defining sport

The definition of sport has been a constant debate in both literature and practice due to the wide arena of characteristics that constitute what is a sport and what is not. Some researchers adopted a narrow definition of sport such as Meier (1981) and Suits (1988) focusing on the characteristics of *physical activity, competition context*, and set of *rules* to govern sport. While others assumed a wider definition of sport that also includes *non-physical activities* such as chess and poker games and *non-competitive* sports such as jogging and mountain climbing (Tamboer, 1992). In the wider definition, the phrase "motor action" (Tamboer, 1992, p. 39) replaces the notion of physical activity in order to broaden the concept of sport (Hsu, 2003).

Another classification that was further discussed in sport literature is the distinction between individualistic sports such as golf and tennis and team sports such as soccer and hockey (Szymanski, 2003). All of these varying definitions of sport agreed that some sort of an award or recognition should be given to the winning team or individual by the end of the sport contest (i.e. season) to define winning or championship (Rottenberg, 2000). The International Sports Federations-Sport Ac-

9

cord, which is responsible for both Olympic and non-Olympic sports as well as all sport-related international federations, defines sports based on a pragmatic view as (SportAccord, 2013):

1. The sport proposed should include an element of competition.

2. The sport should not rely on any element of "luck" specifically integrated into the sport.

3. The sport should not be judged to pose an undue risk to the health and safety of its athletes or participants.

4. The sport proposed should in no way be harmful to any living creature.

5. The sport should not rely on equipment that is provided by a single supplier.

Moreover, SportAccord (2013) acknowledged that sport can be primarily physical such as soccer or American football, primarily mental such as chess games, predominantly motorized like Formula 1 races, primarily co-ordination like billiards or snooker, or primarily animal supported like horseback riding.

For this research, the narrow definition of sport in general and team sports in specific will be adopted in conjunction with the current practical views of sports to be commonly used across all sport leagues used in this research. Thus, sport in this research, is defined as "a competitive team sport that includes *physical activity*, and a clear set of rules from a national and/or international governing bodies to ensure fair play and governed competition with a form of positive reward to the highest performance achieved by a team" (SportAccord, 2013; Szymanski, 2003; Boxill, 2003; Rottenberg, 2000; Suits, 1988; Meier, 1981).

2.1.1 Defining Industry

It is a "market in which similar or closely related products are sold to buyers" (Porter, 1985, p. 233) where this industry can have one or more products sold to existing or potential customers depending on a heterogeneous demand (Hunt and Morgan, 1995, 1996, 2005). The sport industry involves various segments including "sports tourism, sporting goods (manufacturing and retail), sports apparel, amateur participant sports, professional sports, recreation, high school and college athletics, outdoor sports, sports businesses such as sport marketing firms, the sport sponsorship industry, and sport governing bodies" (Pitts and Stotlar, 2007, p. 1).

2.1.2 Defining sport industry

It can be inferred that the sport industry is a market where participating or managing individuals and/or organizations are all taking part in producing, promoting, and managing the sporting product. This product is being offered to interested buyers and could involve goods, services, people, places or ideas (Pitts and Stotlar, 2007, p. 4). The sport products in the sport industry may include:

- Participation (in professional leagues)

- Entertainment (watching the professional leagues matches via media outlets)

- Equipment and apparel (products that must be worn during sporting matches)

- Promotional merchandise (products sold to fans that carry the logo of club and company)

- Sport facilities (products such as stadiums or avenues)

- Marketing research (sport marketing research product)

- Management services (services offered to manage the sporting game)

11

For this thesis, *the focus* will be only on the segment of *professional sports* to produce the sport product (professional European football leagues) that includes the participation of professional European clubs (organizations), players and managers (people) and being sold to prospective buyers (fans).

2.1.3   Sport Industry Size

According to Estimate-PRE (2015), a leading provider of industry's analysis, research, trends and statistics, the global sport industry in 2015 was valued at 1.5 trillion American dollars with sport industry in the United State representing almost 30 percent of the total industry's worth. [1]. When looking retrospectively, the sport industry has grown dramatically in the last 20 years. For example, there was 300 percent expansion in the size of this industry in the United States from 152 billion in 1995 to 498 billion in 2015 (Estimate-PRE, 2015). Moreover, there is a considerable agreement among researchers and practitioners that media outlets make the sport industry more accessible to fans contributing to the growth of this industry (Walliser, 2003; Rottenberg, 2000) during match days (Koenigstorfer et al., 2010) or by watching live game events available via broadcasting through communication media such as television, smart phones and/or internet (Walliser, 2003).

The sport industry like any other industry has to have legislator organizations to ensure the proper governance of the sporting practice in either professional or amateur capacity. Some of these organizations related to the context of this research are Federal International of Football Association (FIFA), and Union of European Football Association (UEFA). They closely control sports organizations worldwide and within Europe alike to produce well-structured football competitions such as FIFA World Cup and UEFA Euro Finals. They are also responsible for providing standardized sport competition guidance for all leagues in Europe.

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[1]PRE is Plunkett Research Estimate

Sport professional leagues fall under the category of participation sport product within the sport industry and would assist sport products to flourish. Leagues work as an industry driver, and without professional leagues, other sport products such as sport marketing and management research, entertainment, facilities, and equipment would be scarce if not non-existent.

Fans are normally the potential buyers of this industry as we indicated before, thus constructing professional leagues in order to gain fans' interest in purchasing "other" sport products is a must for all sport organization. Fans come willingly to attend league matches; therefore, sport professional leagues are continuously working to gain the trust and interest of current and prospective fans alike.

2.2 Economics of Sports

The economics of sports could include a team's output and management decision-making on the organization of both leagues and clubs' resources among many other domains that are not relevant to this research. In fact, the study of sport economics has captured the attention of economists for over 25 years (Cairns, Jennett and Sloane, 1986; Fort and Quirk, 1995; Rottenberg, 2000; Szymanski, 2003; Kahn, 2007; Buraimo and Simmons, 2008; Tremblay, 2009; Garcia-del Barrio and Szymanski, 2009; Kuper and Szymanski, 2014; Andreff, 2011). These studies discussed major sport economics issues related to the macro-level allocation of resource in sport leagues with topics such as league design, competitive balance, analysis of ownership rights and free agency in sports. These topics will be explained here within the focused context of European football sport leagues.

2.2.1 European Sport Leagues: Operation and Design

Management of resources at the macro-level of leagues was discussed in literature with topics such as competitive balance (O'Reilly et al., 2008), pre-season rookie

draft (Szymanski, 2003; Rottenberg, 2000), and allocation of broadcasting revenues (Walliser, 2003) across sport teams within leagues. Nationally or globally, sport teams unite or "organize into coalition of teams" (Rottenberg, 2000) named sport league. Within these leagues, the product of sport is sold to four target markets (Mason, 1999) namely fans, media business, communities and private sponsors. There was a need to establish these leagues as a proxy for sport competitions and entertainment to survive, and allow sport clubs to move away from the amateur practice of sport towards the professional world. This made sport leagues a rewarding domain for both researchers and practitioners alike.

Literature around sport economics of European football was rather limited until the 1990s because operations of professional sports in Europe created such low income that they hardly qualified as commercial entities (Szymanski, 2014). The transformation to the current business started when satellite television technology became more accessible in Europe. This allowed broadcasting to break the monopolized operations of national analog television for national European leagues (Szymanski, 2014; Peeters and Szymanski, 2014) and as a result, allowed substantial broadcasting income for European leagues (Walliser, 2003). Moreover, European leagues were afraid of losing attendance revenue due to the competition coming from broadcasting football games (Mason, 1999), but the massive marketing coverage for broadcasting of European football leagues increased the demand for attendance regardless of higher ticket prices across both large markets such as (England, Italy, Spain, France, and Germany) and small markets in (Netherlands, Portugal, and Ireland) (Mason, 1999).

2.2.2 European Leagues Operation

The European Court of Justice confirmed that all European "professional football clubs are economic entities" (Parliament, 2006). This means, that these football clubs are operating as for-profit following the European Union (EU) competition law.

Thus, in 1995, the European court of Justice constituted the Bosman ruling (Andreff and Staudohar, 2000) which stopped previous movement restrictions on foreign EU players within European national leagues and allowed players in the EU to move freely to other potential clubs at the end of their contracts without monetary penalty. This also prevented clubs in nation A, for example, to provide services in nation B despite the free movement of employees (players or citizens). Thus, agents (players) are free to move after the end of the contract, but principles (clubs) are not allowed to relocate to another nation or open other branches.

Another view to the economic entities of European sport leagues is to enhance the national economy of countries through high revenue flows as well as supporting amateur athletes using sport centers within communities respectively. For example, stadiums created for a specific sport tournament (i.e. FIFA World Cup) will continue to serve the community after the culmination of the sport event and this highlights the ethical and social reasons behind sports existence discussed earlier. This economic entity provides a major economic competition (Neale, 1964) where "The first peculiarity of the economics of professional sports is that [gate] receipts depend upon competition among the teams" (p. 2). That is to say, the uncertainty of match results (Mason, 1999) derive the economic model of sport leagues where fans attend, participate in pre-match activities, purchase products prior to matches which positively enhance the economic well-being of professional sport leagues and teams. Otherwise, why would fans invest in something if they already know it is going to lose? (O'Reilly et al., 2008).

Szymanski (2003) further argued that to keep fans interested in team sports, the economic design of sport leagues competitions should be structured in a way "that all teams have a roughly equal chance of winning or that at least all teams win occasionally" (p.1140) whether in Europe or North America. Furthermore, the economic process of production, distribution, consumption of goods and services applies

to professional sport leagues as an entertainment avenue for fans and spectators. That is, spectators of sports consume sport merchandises and services before, during and after match days continuously throughout the season from "services inside the stadium [such as] bars, sale and hire of cushions, and of other consumable products" (Carmichael et al., 2011). Finally, one aspect of how UEFA is governing the financial operations of football clubs in Europe is the Financial Fair Play (FFP) with two phases (Szymanski, 2014). The first step to achieve FFP occurred in 2011 where "clubs must prove they do not have overdue payments towards other clubs, their players and social/tax authorities throughout the season" (of European Football Associations-UEFA, 2014b). Secondly, "from the 2013-2014 season, clubs must ensure that they comply with break-even requirements, which in principle means not to spend more than they earn" (of European Football Associations-UEFA, 2014b). In other words, European clubs have to prove they have paid their bills.

Since fans are at the heart of leagues' operations in Europe, professional sport leagues there try to operate competitively on various levels to gain and retain fans' commitment. First, European sport clubs within the same local proximity compete against each other over potential fans (Manchester United vs. Manchester City) and (Arsenal FC, Tottenham FC and Chelsea FC) especially when we know that these fans could be attending other entertainment options (Mason, 1999). Second, national leagues such as English Premier League, Seria A, La Liga, or Bundesliga compete against other media outlets as they offer excellent substitutes for the entertainment-hungry consumers (Walliser, 2003). These entertainment shows run at the same time as league matches providing another level of competition. Third, sport broadcasting and programming across global media outlets allow European sport leagues to break the boundaries of national television to reach international destinations consequently increasing the fan base for both leagues and teams alike (Walliser, 2003).

The reason behind financial controls implemented by the UEFA governing body is to improve the financial survival of European football and to prevent clubs from falling into a lot of debts. As a result, it reduces the massive spending from rich clubs such as Manchester City and Chelsea from buying the desirable players available, leaving other less fortunate clubs with less strategic resources, and a less likely chance to compete for a title. Furthermore, UEFA financial controls feed the "uncertainty" of results within fans because they increase the number of competing clubs over a title. These clubs, without FFP, would find it difficult to compete and consequently would not advance to more prestigious European clubs national competitions such as Champions League or Europa League. This was also evident in Rottenberg (1956, 2000) articles on players' market and resource allocation where he stated "If the players' market were free, the rich clubs would out-bid the poor for talent, taking all competent players for themselves and leaving only the incompetent for other teams" (p. 246).

It is a compelling argument that European sport leagues face direct competition avenues from other entertainment product sellers, which produces highly differentiated entertainment commodities that compete against each other to gain more of fans' attention. For example, we currently see European teams such as Manchester United, and Real Madrid being followed by a large fan base located in other continents other than Europe such as Asia. These teams signed television broadcasting rights with international telecommunication companies such as Saudi Telecom Company-STC to broadcast live matches, and club exclusive news and interviews on mobile devices and media consoles

2.2.3   European Leagues Design

Generally the design of leagues in European sports such as soccer (football), basketball and rugby (Szymanski, 2003) are committed to an open league system (Andreff, 2011)

that allows entry to new teams through a relegation and promotion system every season (Fort, 2000). More specifically, these European leagues have the following common economic design or structure:

1. Integrated governance structure within a global hierarchy and national leagues subordinate to national associations that participate in international competition using league players;

2. Mobility of teams through the system of promotion and relegation;

3. Free entry for new teams at the bottom of the hierarchy, but promotion on sporting merit only;

4. Nonexclusive territories;

5. Competitive labor markets at the entry stage, no draft;

6. No roster limits;

7. High player mobility and trading for cash, especially for top stars;

8. Limited unionization or collective bargaining over player conditions;

9. Limited collective sale of national broadcast rights (no antitrust exemption);

10. No collective sale of merchandising;

11. Limited restrictions on the stock market flotation of clubs (Szymanski, 2003, p. 1151).

Twice a year, at the end of summer and winter transfer windows in each season, professional football clubs in Europe have to submit an official roster to their national leagues (i.e. EPL or Spanish La Liga) who will forward that list to the international governing bodies of UEFA and FIFA respectively (**FIFA, 2013**). UEFA introduced

the 25-man rule that must consist of young players (i.e. rookies) and it will be in three phases. It is as follows: (of European Football Associations-UEFA, 2014*b*)

1. Season 2006/07: minimum of four home grown players in 25-man squad

2. Season 2007/08: minimum of six home grown players in 25-man squad

3. Season 2008/09: minimum of eight home grown players in 25-man squad

The roster will not be permitted to be changed unless a player is significantly injured (i.e. cruciate ligament injury) and cannot play the rest of the season. Then, a club should send an official medical profile and request to FIFA asking for a substitution *only from* the "free agency players list" available for immediate transfer (i.e. they do not have a current contract with any other clubs). As well, European clubs, starting from the 2012-2013 season will be forced to follow the 6+5 rule to limit their starting 11 players to only 5 foreign players in local leagues (de Football Association-FIFA, 2008).

Other ownership rights on players started to emerge in European leagues limiting the rights of both clubs and players (Szymanski, 2003). Players cannot transfer or negotiate a new contract until they enter the last 6 months of their current contracts in soccer (de Football Association-FIFA, 2010). If other clubs still want to purchase a certain player while his contract is binding, they have to then negotiate a transfer fee directly with the player's current club according to the player's current market value. The transfer of players through acquisition or as free agents from one team to another within the same league or to another competitive league is acceptable among fans and team owners in the European team sports (Szymanski, 2003). Intra-league transfer of highly talented players between European clubs within the same league would benefit buying teams more than the sellers since their share of talent is increasing (Szymanski, 2003)(Andreff and Staudohar, 2000).

2.2.4 Relegation and Promotions

The implementation of promotion to higher leagues and/or relegation to lower leagues within the open system of European football were used as a major rule to keep a competitive balance within each leagues whether they are first, second or third division leagues in Europe (Andreff and Staudohar, 2000). Consequently keep the hopes of fans high (Kaplan et al., 2011) because the uncertainty of game outcome is unknown (O'Reilly et al., 2008). This would translate into a higher fan's interest level as they attend and watch more games allowing teams to generate more revenues as a result (Buraimo and Simmons, 2008; Kuper and Szymanski, 2014). The promotion and relegation system in European leagues encourages teams to increase their performance in order to avoid relegation and reduction of revenue by 80 percent for relegated teams or achieve promotion and increase revenue by five times for promoted teams (Andreff and Staudohar, 2000). For example, teams who qualify to Champion Leagues usually increase their revenue up to 40 percent (Andreff and Staudohar, 2000). UEFA explained the (2012/2013) Champion Leagues revenue sharing as follows (of European Football Associations-UEFA, 2012)

- The 32 clubs featuring in the 2012/13 UEFA Champions' League group stage can anticipate a minimum € 8.6m – and the team that goes on to win the trophy next spring could collect € 37.4m.

- Each of the 32 sides involved in the group stage will collect a base fee of € 8.6m. Performance bonuses will also see € 1m paid for a win and € 500,000 for a draw in the group phase.

- The teams competing in the round of 16 can also expect to pick up € 3.5m each, the quarter-finalists € 3.9m and the semi-finalists € 4.9m. The UEFA Champions League winners will receive € 10.5m and the runners-up € 6.5m.

Unlike the North American closed league system that allows teams to still exist in first division leagues despite their lower on-field performance; the European open league system of promotion and relegation allows a higher risk when threatening the existence of teams in first division. Resource theories such as RBT and R-A explained that firms' existence is tightly linked to either financial or non-financial or both. Evidently, the closed league system shifts the focus of team management toward more financial existence especially since there is no threat of leaving the league "all together". Thus, there would be lower "sense of urgency" levels for on-field performance despite tremendous efforts to avoid it. Therefore, if clubs could not do improve their on-field performance this year, they could try next year as long as their financial books were getting better.

The home-grown rule implemented by UEFA in Europe allowed more home players to play in the upper level leagues in Europe. Therefore, the production of talent and skills (supply chain of skillful players) will continue to produce an output for national leagues. This will also strengthen the structure of football sport industry in Europe starting from grass-root leagues up to professional divisions.

A Club's shareholders will surely not like an imposing financial control such as FFP because it will limit their ability to gain more financial exposure when purchasing more valuable players. To make the case, some European football clubs have recently experienced a shift in their ownership system from a group of owners to a sole holder of all shares. For example, single yet different wealthy individuals bought teams such as Arsenal, Manchester City, Paris Saint-Germain FC, and Chelsea. On the other hand, medium and smaller teams in the upper European division flights will find it easier to follow the FFP rule since they normally depend on the leagues' annual financial budget distribution and selling of younger talent to bigger clubs.

2.3 Reasons to choose Sports context

Using sports as a research context is widely used in literature domains such as accounting (Risaliti and Verona, 2013), organizational studies (Wolfe, Weick, Usher, Terborg, Poppo, Murrell, Dukerich, Core, Dickson and Jourdan, 2005), human resource strategies (Wright, Smart and McMahan, 1995), resource-based analysis (Lechner and Gudmundsson, 2012), and sport economics (Szymanski, 2003; Kuper and Szymanski, 2014; Andreff, 2011). Other sub-domains in literature such as loyalty, commitment, pay equity and structure were also discussed in various studies (Wolfe et al., 2005). More importantly, Wolfe et al. (2005) and Wright et al. (1995) both stressed that the sport context could be greatly beneficial for theory testing and development (i.e. advancing R-A Theory), which gives confidence for this research thesis and further study. More specifically, there are three reasons on why sport context was chosen to be the context of this research:

2.3.1 Isolation of resources' effect

Within the professional sports research context, it is maybe easier to isolate the effect of resources on performance (success) compared to other industries. That is, a researcher can clearly identify and/or quantify the effect of sport team players on the total team performance or success. For example, Barcelona soccer player Lionel Messi's total shots on target in Spanish La Liga (2012/2013) season was 81 shots out of 228 total shots on target made by the team, which is almost 36 percent of total performance when using this specific measure. He scored a total of 46 goals from 81 attempts on target translating to an almost 57 percent accuracy rate. On the other hand, *isolating* the effect of individual performance of a human resource team and its success at a given firm, for example, would be challenging and difficult to quantify because of the higher level of interrelatedness and the overlapping nature of administrative jobs compared to sport teams where player's individual performance

can be measurable (i.e. goals scored, goal assisted, minutes played, shots on/off target, goals blocked...etc). Pfeffer and Davis-Blake (1986) suggested that " One of the advantages of using sport... is that...teams have a clear measure of success—their won-loss records" (p. 77) while Bloom (1999) stated, "individual and organizational performance were observable and could be reliably measured" (p. 25).

Other forms of resource isolation would be new set of players per season, a player's experience, weather, and the fan's experience.

Players Set: Every season clubs have newer 'set' of players' resource that are somewhat different than previous or following season. For example, some players come back from their loan to join the team while others leave for reasons such as injury, transfer, or retirement. This set is continuously changing. Thus, the resources related to it can be considered on its own unique set of characteristics. Professional sport organizations or clubs will face various challenges every season depending on the unique set of players they have for that specific season. One valuable player might win a championship for a club, causing upper management to carefully consider the consequences of each set of players accordingly, and match it with their season objective.

Players' Experience: Every season, the degree of a player's experience changes because of the games they accumulated from the previous season. Thus, these players will provide a different isolated result to their team the current season than they did during previous one. Experience can not be identical; thus professional sport organizations will benefit from such experience accumulation by players.

Weather: It is obvious that weather is always changing from one season to another. The change of weather could suspend football games, interrupt a season or an individual game, or reduce the attendance of fans. This is an external effect that professional sport organizations have limited control over unless football matches are played under covered avenues which is rarely the case in professional sport practice.

Fan's Experience: Fans have different isolated experiences every season. Their emotional attachment to a team changes depending on team results. Even loyal fans experience different intrinsic feelings and associations with their teams that will make them have different expectations they have about their teams. Professional sport organizations should relate to these changing fan experiences by offering newer sport marketing products or services that match the new expectations in order to keep the profitability growing.

2.3.2 Publicly available data

The pool of data within sport contexts is more publicly available than any other related field and as a result, we can obtain data on both dependent variable of on-field performance, and a list of independent variables identified from literature. Wolfe et al. (2005) indicated that the advantage of available data in sport was a major logical reason for many studies within sport domain. For example, reliable sport web sites such as Transfermarkt, Whoscored, Deloitte, and Sporting Intelligence or Forbes can give the researcher direct, free or low cost paid access to sport teams data. On the other hand, it would be extremely puzzling to find reliable sources of data in other research contexts especially since that kind of access to a private firm's data is highly secured and protected for privacy reasons. Thus, granting access to a researcher is highly improbable. With regards to sport teams, the researcher believes that one reason behind the high degree of available data within sport context is related to transparency demands by international or national governing bodies such as FIFA and UEFA that all European clubs be transparent about their financial spending in order to avoid further sanctions such:

> Warning, reprimand, fine, deduction of points, withholding of revenues
> from a UEFA competition, prohibition on registering new players in UEFA

competitions, restriction on the number of players that a club may register for participation in UEFA competitions, disqualification from competitions in progress and/or exclusion from future competitions, withdrawal of a title or award (of European Football Associations-UEFA, 2014a).

2.3.3 Defined Timelines

Each sport season in all leagues has start and end dates in which all sport activities will take place under supervision by national and/or international governing bodies. Therefore, performance carry-overs are rather limited or non-existent since performance of team A in season B will **not** affect the next season's performance (B+1) of the same team because total points available in current season will not carry over to the next season. In the non-sporting business context, performance from a previous financial statement, for example, would be more likely to affect the subsequent quarters in business firms (e.g. Blackberry).Raju and Lonial (2002) argued that "past quality performance dimension and the rationale ... would just reflect the carry-over effect of past quality improvements on the present financial performance" (p. 341). However, when we use on-field performance, it is going to be different. There is no spillover of points from previous season to the new season; thus, no carry-over effect will be used here.

2.4 Relevant Background Theories

Resource theories can "provide marketing managers with conceptual framework that can be used to identify important resources" (Hunt and Arnett, 2004) (p. 19). Thus, the overall theoretical framework of this empirical study is built on the framework of Resource-Advantage Theory (Hunt and Morgan, 1995, 1996, 2005). This theory complimented and often discussed with other resource related theories such as such as Transaction Cost Theory (Williamson, 1975, 2007), Agency Theory (Jensen and

Meckling, 1976), Porter's competitive advantage (Porter, 1980, 1985) and Resource-Based Theory (Barney, 1991; Wernerfelt, 1984).

These theories provide varying perceptions about the use and management of firm's resources and the potential benefits gained from them. Williamson (1975, 2007) focused on the cost reduction of acquired resources as a primary way of business success, while Jensen and Meckling (1976) indicated that transaction costs of business operations should be complimented with internal management authorities and delegation of power from business owners (principle) toward employees (agents) governed by management systems to control or reduce agents' shirking of responsibilities. Both of these theories had two common assumptions of human bounded rationality and opportunism (Barney and Hesterly, 2006). RBT provided further detailed reasoning about firms' resources more than both TCT and AT combined (Kozlenkova, Samaha and Palmatier, 2014). It indicated that if firms want to outperform others within a business domain, their resource attributes must be valuable, rare, inimitable, and non-substitutable representing the VRIN model of resources (Barney and Hesterly, 2006)

Firms are collections of resources that in turn contribute to the existence and future success of firms regardless of their business domain (Hunt and Morgan, 1995, 1996; Barney, 1991; Wernerfelt, 1984). Reducing the cost of business operations in order to extract more benefits from these resources was the major driver in this domain of research (Williamson, 1975). Simply put, the answer to the major research question of "why do firms exist?" (Coase, 1937) in relation to resources was discussed in various theories such as Transaction Cost Theory (Williamson, 1975), and Agency Theory (Jensen and Meckling, 1976). According to these theories, there are two forms of business organizations happening under the supervision of business owners and their employees (Jensen and Meckling, 1976) named firms and market organizations (Williamson, 1975). Firms will reduce the cost of business operations more than

markets, which in turn increase performance (i.e. higher profits with lower waste). For example, vertical integrations (Williamson, 1975), the control of principles versus agents to reduce shirking (Jensen and Meckling, 1976) and increasing barriers to entry for new competitors (Porter, 1980, 1985) were all strategies to reduce the costs of market transactions in favor of firm organizations to increase the overall performance (Barney and Hesterly, 2006). On the other hand, RBT explained the internal aspect of how do firms outperform each other, which was complementary to the external analysis of Porter's competitive advantage theory. According to RBT, firms can extract higher business benefits if resources were valuable, rare, inimitable, and non-substitutable (Barney and Hesterly, 2006) with a heterogeneity and immobility priory assumptions (Barney, 1991). These benefits will translate in the long run into sustainable competitive advantage over competition (Barney, 1991). Table 1 explains these four VRIN resources' attributes in detail.

2.4.1 Resource Advantage Theory

R-A theory is considered the most noteworthy theoretical perspective when it comes to resources domain in marketing literature (Kozlenkova et al., 2014). R-A theory extends RBT by adding competition dynamism, and enforce that demand is heterogeneous rather than homogeneous (Hunt, 2011). Thus, Hunt and Morgan (1995, 1996) developed a theory of competition named Resource-Advantage theory (hereafter, R-A) in their attempt to explain the competition phenomena better than the neo classical theory (perfect competition) and other strategic management theories such as Resource-Based Theory (hereafter, RBT) (Wernerfelt, 1984; Barney, 1991) and Porter's 5-Forces model (Porter, 1985). What is different in R-A Theory compared to RBT and Porter's competitive advantage? R-A theory is more comprehensive since it combines both the internal and external domains of competitive advantage

Table 1: Resource Based Theory four attributes (adapted from (Barney, 1991)

Attribute	Literature Description
Valuable (for example Chief Exceecutive officer)	1. Improve firm's efficiency and/or effectiveness, address a business opportunity or minimize a potential threat. 2. Provide some usefulness to firms employing them either by outperforming their competitors or reduce deficiencies (Amit and Schoemaker, 1993; Barney, 1991; Gouthier and Schmid, 2003) or by the direct or indirect positive perception of customers (Gouthier and Schmid, 2003) that these resources provide a market offering that has value to certain market segments (Hunt, 2011).
Rare (for example, Oil)	1. Limited access to resources by current or potential competing firms. 2. The number of firms holding valuable resources is less than what is needed within an industry.
Inimitable (for example, tacit knowledge)	1. Rivals cannot copy the firms' marketing offering. Inimitability helps in sustaining rarity over time 2. Conditions for inimitability (Gouthier and Schmid, 2003) are: • From unique historical conditions by being at the right place and time • Causal ambiguity and social complexity: Causal relationship between firm's SCA and resources, which cannot be completely understood or explained (i.e. culture, knowledge-based resources, interpersonal communication, and reputation among suppliers and/or consumers) (Barney, 1991; Conner and Prahalad, 1996; Hunt and Morgan, 1995)
Non-substitutable (for example, organizational culture)	1. There should not be a possible comparable resource that could be used as a substitute to the valuable, rare, and inimitable resource. 2. This condition is a must in order for the previous three to prevent other competitors to "conceive of and implement the same strategies" (Barney, 1991).

in one theoretical foundation that encourages competition to achieve superior performance (Hunt and Morgan, 2005). RBT does not discuss competition at all (Priem and Butler, 2001), while Porter advocate for the barriers to entry (Porter, 1985) as a mechanism to reduce competition in an industry. In summary, through the R-A lens, "competition is a process of knowledge" (Hunt and Morgan, 2005, p. 153) that a firm engages in to arrive at a better competitive advantage position through the use of viable resources governed by foundational premises. These resources are classified in the sixth premise of R-A theory into seven categories, which are financial, physical, human, relational, organizational, informational and legal resources. They will be greatly explained in section (4) within the sport context of this research.

2.5 Framework, Resources and Foundational Premises

Hunt and Morgan (2005, p. 154) defined this theory as "a general theory of competition that describes the process of competition. . . in which innovation and organizational learning are endogenous; firms and consumers have imperfect information; and entrepreneurship, institutions, and public policy affect economic performance". It has nine foundational premises summarized in Table 2 below.

R-A introduced a position opposite to neoclassical perfect competition theory that demand is heterogeneous in terms of a consumer's tastes and preferences (P1), and combined it with RBT's view that a firm's resources are heterogeneous and imperfectly mobile (P7). This was done to imply that firms differ in their sizes, scopes, and profitability (Hunt and Arnett, 2004) across businesses and within same industry (Hunt and Morgan, 1997). This theory explains the competition phenomenon from both the macro and micro perspective by describing the dynamic between various internal and external environmental factors such as societal resources and institutions, competitors, consumers, and public policy (Hunt and Morgan, 2005) as denoted in Figure 1 below:

Table 2: Resource Advantage Premises, (Hunt and Morgan, 2005)

Premise	Foundational Premises of Resource-Advantage Theory
P1	Demand is heterogeneous across industries, heterogeneous within industries, and dynamic
P2	Consumer information is imperfect and costly
P3	Human motivation is constrained self-interest seeking
P4	The firm's objective is superior performance.
P5	The firm's information is imperfect and costly
P6	The firm's resources are financial, physical, legal, human, organizational, informational and relational
P7	Resources characteristics are heterogeneous and imperfectly mobile.
P8	The role of management is to recognize, understand, create, select, implement, and modify strategies.
P9	Competitive dynamic are disequilibrium provoking, with innovation endogenous.

Figure 1: Schematic representation of Resource Advantage Theory, (Hunt and Morgan, 1996)
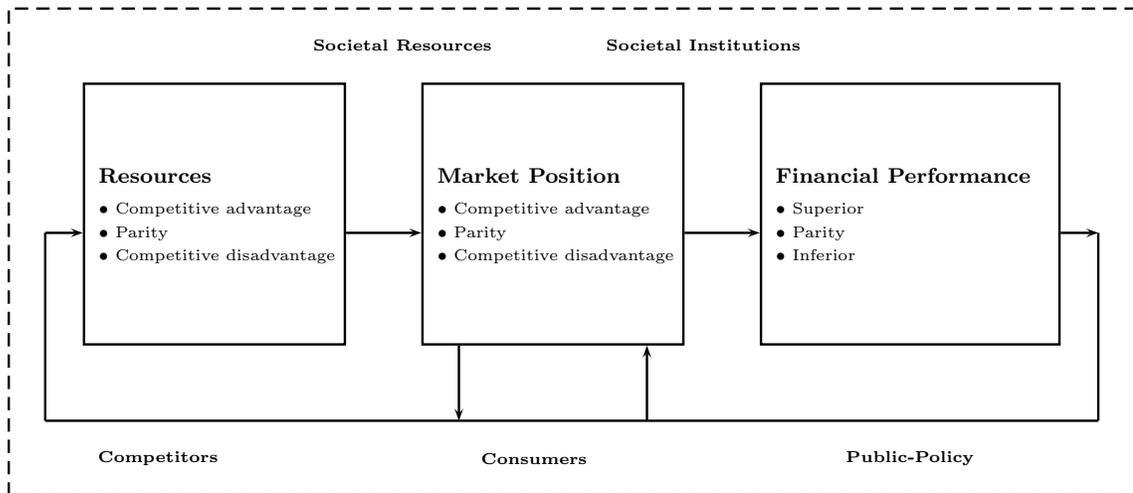
It acknowledges that firms do learn in the marketplace from many sources such as "conducting formal marketing research, seeking out competitive intelligence, dissecting competitors' products, benchmarking and market testing" (Hunt and Morgan, 1996, p. 109). Resource Advantage theory extends these learning sources by stating that firms learn from the feedback loops coming from the competition in the marketplace as in Figure 1. These feedback loops indicate the 'current' financial performance position that firms hold, and based on that information, firms learn how to adjust their resource portfolio in order to yield a better market position. This portfolio can include, for example, any combination of the following resources; financial resources as cash reserves, access to financial markets, and annual budgets. Human resources like employee skills and knowledge or organizational resources such as competencies, controls, policies and culture. These two are normally linked to each other especially since employee competency is needed to achieve proper decision-making. Informational resources like intelligent knowledge from or about customers and competitors will enhance the a firm's marketplace prosperity, especially if we recall the feedback loops that were crucial in gaining or maintaining competitive advantage positions. Finally, relational resources from relationships with suppliers and/or customers that can highlight the positive benefits or negative downside of both internal and external relationships with all possible stakeholder indicated in R-A theory (customers, competition, society, government, and policy). Therefore, a combination of these resources can help firms to produce "efficiently and/or effectively a market offering that has value for some market segments(s)" (Hunt and Morgan, 2005, p. 173).

Hunt and Morgan (1995, 2005) explained in Table 3 above that firms acquiring cells 2, 3, and 6 above are in a competitive advantage position, thus they are used as the 'ideal set' that firms in cells 4, 7 and 8 aspire to. The firms acquiring the competitive disadvantage positions indicated above learn from the feedback loop in Figure 1 and make an effort to "neutralize and/or leapfrog" other advantaged firms by

Table 3: Competitive Position Matrix, (Hunt and Morgan, 2005)

| | | Relative Resource-Produced Value | | |
		Lower	Parity	Superior
Relative Resource Cost	Lower	1 Indeterminate position	2 Competitive Advantage	3 Competitive Advantage
	Parity	4 Competitive Disadvantage	5 Parity	6 Competitive Advantage
	Higher	7 Competitive Disadvantage	8 Competitive Disadvantage	9 Indeterminate Position

implementing reactive innovations (i.e. better resource management systems, acquire same or similar resources, and/or purchase new less costly resources) in order to produce a value offering that is superior to other firms.

Moreover, proactive innovation is entrepreneurial in nature by spotting new business opportunities and occurs when competitive pressures are absent. Therefore, competition in R-A theory is viewed as the "constant struggle among firms for a comparative advantage in resources that will yield a marketplace position of competitive advantage and, thereby, superior financial performance" (Hunt and Morgan, 1995, p. 8).Hunt and Morgan (2005) indicated that in order for firms to be a constant innovative leader, firms should not only acquire proactive and/or reactive innovations, but also major innovation with nonsurpassable resources that will yield a position of competitive advantage for a longer duration of time.

2.5.1 Marketing and Resource Advantage Theory

One might argue that R-A Theory is only a business strategy theoretical foundation and limited when discussing marketing strategy, but Hunt and Morgan (2005) explain that acquiring a competitive advantage position when competing in the marketplace

such as football clubs playing in sport leagues, for example, would be accomplished through acquisition, management, and development of strategic resources in order to compete effectively. Thus, the strategic view of marketing is about matchmaking between the limited resources and greatest opportunities leading to highly proactive major innovation within firms (Baker, Gibbons and Murphy, 2008). Viewing marketing as a strategic resource is greatly influenced by the presence of R-A theory (Hunt and Morgan, 1995, 1996). If we apply R-A analysis to treating marketing as a resource leading to competitive advantage, then firms will

1. Implement resource advantage strategies to develop, protect and enhance the marketing resource in order to provide superior customer value through valuable market offering to some market segment (Hunt and Arnett, 2004)

2. Engage in market orientation (studying of both customers and competitors) and relationship marketing strategies to achieve superior performance (Hunt and Morgan, 2005).

This theory encompasses the marketing classical (conventional) view of segmentation, targeting, and positioning (Kotler, 2005). To further explain this, R-A theory takes a longer, more strategic view of the firm, in general, whereas the conventional view is much more focused on a particular market offering. R-A theory is a (positive) theory of competition that has certain implications for (normative) marketing strategy. Therefore, R-A theory is not a normative theory of strategy, per se. See Figure 3 to illustrate the researcher's intuition above.

Therefore, firms should involve in selective businesses only by having the right collection of "best" resources or a portfolio-business fit. In other words, specialization of resources is needed in order for firms to excel in what they do. This specialization will come when a firm has the right mechanism to evaluate resources according to

33

Figure 2: Classical vs. Resource Advantage view of marketing

Source: Kotler (2005)
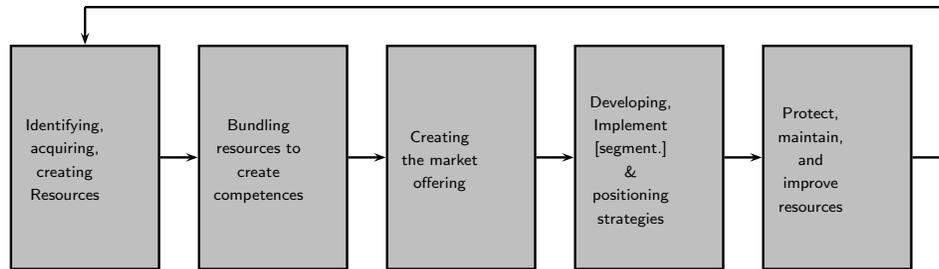
Source: Hunt and Morgan (2005, p. 189)

their importance. Another important assessment on the benefits of R-A theory is its' classification of resources into 7 categories with 4 of them considered as strategic. Also, it mentioned that management is one important premise leading to competitive advantage with their recognition, understanding, creation, selection, implementation, and modification of firms' strategies. On the other hand, R-A theory did not fully provide a more fulsome explanation on how resources are managed, and what decisions management takes inside firms to increase performance. Management decisions are highly linked to the learning process represented by the feedback loops in the marketplace explained earlier. These loops are continuous and never ending, which will yield a better level of management resource knowledge, experience, and continuous firm improvements. This is the essence of outperforming competition in the long run.

2.5.2 Firms' Performance and Competitive Advantage

Three strategic management theories that explain a firm's performance internally, externally and combined were discussed. In order to arrive at any plausible reasons as to why R-A theory was chosen as a framework for this empirical thesis, the following will compare and contrast these theories with each other and highlight how R-A theory takes a more holistic view than both RBT and Porter's competitive advantage.

Comparing R-A with RBT

RBT theory was challenged with some major criticisms since its early years. Some of these important criticisms are summarized as follows:

1. RBT is tautological; hence, it is always true and cannot be falsified. Thus, resources are always agreed upon as sources for competitive advantage. Who can challenge that notion? Any theory, when it is being considered a theory, has to be falsified, which is not representative in RBT (Priem and Butler, 2001; Foss and Ishikawa, 2007)

2. RBT does not represent any competition analysis, which makes it static without any reasoning behind it (Priem and Butler, 2001; Fahy and Smithee, 1999). The basic foundational premise of the RBT is to denote that firms outperform others by excelling in resources that are valuable, rare, inimitable, and non-substitutable (Barney, 1991). Therefore, the notion of competition is viable here, but lacks a competition description on how firms can actually do it.

3. Sustainable competitive advantage does not only result from the VRIN attributes, but also from excelling in innovation as a source for long-term success (Becerra, 2008).

4. Causal ambiguity is limited to firms. For example, RBT explains that tacit knowledge among a firm's managers is one aspect that is ambiguous for other

competitors to duplicate since it requires an understanding of the previous educational environments that these bright managers went through. Any firm's historical evolution is another causally ambiguous intangible resource that is hard to copy by competitors. But RBT explained these examples only within the firm's environment without extending it to include the ambiguity of competitors and consumers Hunt and Morgan (2005)

2.6 R-A Overcoming of Major Criticisms

The following discussion will highlight how R-A dealt with these four criticisms explained above. Priem and Butler (2001) explained that for RBT to overcome the tautological criticism, it should be combined with a theoretical demand model in order for it to be falsified. They suggested R-A as a perfect fit with RBT since both are considered resource theories, but the former combines RBT with the heterogeneous demand theory, which states that a consumer's tastes and preferences are changing (Alderson, 1957). Therefore, empirical studies on RBT attributes if combined with R-A theory of competition could be falsified because of the notion of the continuous preference change in the mind of consumers (people). Thus, it is possible to reject the null hypothesis and achieve statistically significant research studies.

The R-A literature represents a theoretical understanding on how R-A overcame the static nature of RBT (no competition dynamism) as well as the innovation as a source of sustainable competitive advantage. Hunt and Morgan (1995, 2005) explained that firms in a competitive advantage position are the 'ideal set' that other firms aspire to. Firms move toward or away from this ideal position, thus, they are on a constant dynamic movement based on their success or failure of their business operations. The interchanging movements in a firm's position from competitive advantage to a disadvantage are representative in a competitive dynamic R-A theory structure.

Moreover, proactive innovation is entrepreneurial in nature by spotting new business opportunities and occurs when competitive pressures are absent. Therefore, competition in R-A theory is viewed as the "constant struggle among firms for a comparative advantage in resources that will yield a marketplace position of competitive advantage and, thereby, superior financial performance" (Hunt and Morgan, 1995, p. 8). The investments in innovations will also allow firms to outperform competition and be a leader in the marketplace through an increase in efficiency and/or effectiveness in the production and service processes.

Hunt and Morgan (2005) indicate that in order for firms to be a constant innovative leader, they should not only acquire proactive and/or reactive innovations, but also major innovation with nonsurpassable resources that will yield a position of competitive advantage for a longer duration of time. When applying the argument of Wernerfelt (1984) that current portfolio of resource should be the essence of innovation, we can see that there is a flow between these different resource theories (RBT and R-A). Another reason why R-A is "inherently dynamic" (Hunt and Morgan, 1995, p. 8) is because there are five environmental factors identified in R-A theory that will significantly influence the competition process. These are societal resource, societal institutions, competitors-suppliers, consumers, and public policy (Hunt and Morgan, 2005).

With regard to causal ambiguity in R-A, Hunt and Morgan (2005) indicated that ambiguity could be found within the competitive dynamic process and marketplace alike. For example, the competition process is classified as highly complex, and ambiguous phenomenon under R-A theory and it goes beyond the limits of firms because it involved the "constant struggle among firms" (Hunt and Morgan, 2005, p. 156) for a competitive advantage positions in the marketplace. In this process, a competitor's strategies and actions will provide a great deal of ambiguity, which could hinder the competitive advantage of leading firms if not studied properly. Moreover, R-A the-

ory indicated that ambiguity is also present when studying the needs and wants of consumers in order to achieve "high-quality customers service, strong brands, market orientation, and successful new product development processes…and customer relationships" (Hunt and Morgan, 2005, p. 191). Thus, the casual ambiguity in R-A theory exceeds the internal environment of firms to include both the external environments of competitors and customers.

2.7 Comparison: Resource Advantage vs. Porter's Competitive Advantage

Starting a comparison dialog to discuss these two major evolutionary advantage perspectives would require a series of research articles. The thesis will only illustrate some important differences between them over eight topics often discussed in the research of resources' management field. These topics are summarized in table 4 below.

1. **Nature of Resources:** Both theories extended the classical view of resources (land, labor, and capital) to include many other tangible and intangible resources. For example, R-A theory explained in premise 6 that a firm's resources are financial, physical, legal, human, organizational, informational and relational, which enable the firm "to produce efficiently and/or effectively a market offering that has value for some market segment(s)" (Hunt and Morgan, 2005, p. 172). Moreover, Porter (1985, p, 62) explained that lowering the value chain activities' cost is considered a competitive advantage. Costs and/or expenditures are considered to be tangible since it can be quantified and clearly analyzed in quarterly or annual statements. Porter (1985) indicated that this tangible domain relies on a mix of cost drivers that determine the final value chain activity cost. These cost drivers are "economies of scale, learning, the pattern of capacity utilization, linkages, interrelationships, integration, timing, discretionary

Table 4: Comparing R-A with Porter's Competitive Advantage (non-inclusive)

Topic	R-A Theory	Porter's Competitive Advantage
Nature of Resources	Tangible and intangible with more focus on the **unobservable** nature of resources (i.e. intangible, hard to measure or quantify. . . etc.)	Tangible and intangible with more focus on the **observable** nature of resources (i.e. tangible, easy to measure or quantify. . . etc.)
Value	Value Creation focus	Value Chain focus
Competition	Support **all** Competition (pro-competitive)- disequilibrating	(Reducing) Limit Competition to only **good** competitors-equilibrium
Performance	Striving for Superior Performance	Striving for superior sustainable performance while accepting moderate profit for wealth maximization
Strategy Success Factor	Resources' portfolio (Firm Effect)	The right industry (Industry Effect)
Heterogeneity	Firms' heterogeneity is **within** and **across** industries.	Firms' heterogeneity is **only across** industries, but homogenous within industries
Efficiency	Occurs by: • Resource allocation • Resource creation with lowest cost • Market segment identification	Occurs by: • Reduction of competitors (Market Efficiency) • Low cost operations • Economies of scale
Effectiveness	Occurs by **successful** • Resource allocation and creation • Valuable market offering for consumers • Value creation	Occurs by **successful** • Reduction of competitors • Management of value chain activities (primary and secondary)

policies, location and institutional factors"(Porter, 1985, p. 70). When looking carefully into this list of cost drivers, one would see a mix between tangible (e.g. economies of scale) and intangible resources (e.g. interrelationships), but there are more intangible cost drivers than tangible ones. R-A theory clearly indicated that intangible resources are the major driver leading to higher performances (Hunt and Morgan, 2005). The philosophical assumptions of observable and unobservable are well explained by the philosophy of scientific realism, which believes in both phenomena. It is a "positive epistemic attitude towards the content of our best theories and models, recommending belief in both observable and unobservable aspects of the world described by science [and] can be sources of scientific statements (Van de Ven, 2007). This is as the middle ground or a compromise opinion that bridges the gap between positivism and relativism bi-polar ideologies (Van de Ven, 2007). To the author, using which side of the scientific realism philosophy is a pure personal choice in order to differentiate a theory from others. Therefore, R-A focused on the intangible resources (un-observable) phenomenon, while Porter's competitive advantage theory used the cost advantage structures to illustrate vividly the tangible resources (observable), which was clear in his value chain activities framework.

2. **Value:** Both theories agreed that creating customer value is an important factor to achieve competitive advantage and superior financial performance, however explained that fact somewhat differently. R-A focused on the resources as the primary source of value, while Porter focused on the collection and interconnect-edness of chain activities leading to customer value. Hunt and Morgan (2005) stated that there is an alternative way to explain the value chain framework by (Porter, 1985). They indicated that resource picking from acquisition or creation and capability building from resource bundling would ease the understanding

on how customer value creation will lead to superior financial performance. For example, team efforts as we mentioned before, will lead to higher performance measures than individual ones. Thus, the resources of each member of the team are being 'built' and carefully 'picked' to form a cohesive unit in order to achieve a higher level of financial performance. These careful resource picking and capability building will lead to a valuable market offering to some segment(s) through marketing segmentation and positioning strategies (Hunt and Morgan, 2005).

Porter (1985), on the other hand, argued that buyers (customers) value occurs from focusing on the firm activities (primary and secondary/support) through careful recognition and evaluation of them during the value chain process. This will result into two kinds of buyers (customer) value:

- Lowering buyers cost

- Raising buyer performance

By evaluating each activity, managers will be able to prioritize the list of value chain activities according to their value-creating output; thus improve the competitiveness of the 'special' activities since they contribute 'more' to customer value (reducing buyer costs and/or increase product performance). The term 'cost' includes all the tangible and intangible sets such as monetary, time, effort and all other transactional costs associated with a purchase transaction. Reducing any or all of the above will lead to lowering buyers' cost and reduce the possibility of product/service failure. Firms can also provide value to customers by increasing product performance leading to customer satisfaction. These two mechanisms will make customers willing to pay premium prices in order to acquire value that is not being offered by other competitors. Therefore, we see some retailers charge higher prices as a result of their differentiation strategy.

According to Hunt and Morgan (2005, p. 184-185), one drawback to the "chain metaphor" is that it does not serve the fast majority of business firms. The service firms are not well represented by the chain linear input-output relationship for product production process. Thus, it represents a tangible sense of 'goods' rather than an inclusive view by including the intangible sense of 'service'. Therefore, R-A theory suggested the value creation explained above as a more inclusive term to the value chain.

3. **Competition:** Both theories agreed that competition will positively enhance competitive advantage for firms, but Porter (1985, p. 201) indicated that competition should be limited to only "good competitors" since they will also lead to sustainable advantage in the long run. Thus, firms should attack weak or bad competitors who would make the competition dynamism worse, and strengthen ties with strong positive competitors who are more likely to add value to the industry structure and improve the firm's market position. Porter (1985, 202) further indicated that the good competitors would result into four strategic benefits for the competition process: "increasing competitive advantage, improving current industry structure, aiding market development, and deterring entry". Porter indicated that a good competitor should be credible and viable, realize the self-weakness, understand the rules of business, set realistic assumptions, cost intelligent, strategically enhancing the industry, strategically focused, set exit barriers, and be goal oriented.

The position of R-A theory on competition was relatively more generic than Porter's extensive explanation. Hunt and Morgan (2005) indicated that competitors-suppliers are one of the important environmental pressures that influence the competition dynamic process that includes relative resources and market positions leading to financial performances. They defined competition as the

"disequilibrating, ongoing process" (Hunt and Morgan, 2005, p. 156) toward achieving a comparative advantage in resources leading to competitive advantage, hence a positive market position, which will be rewarded with a superior financial performance.

The process of competition in R-A terms is continuous since there is no equilibrium settlement to aspire to, which was further highlighted by the competitive position matrix where Hunt and Morgan (1995, 1996, 2005) explained that in order for a firm to move from a position of competitive disadvantage to an advantage one, it should adopt either proactive or reactive innovation. If such a firm is aspiring toward sustaining such a competitive advantage position in the long run, it should advance and improve its current innovation standards to be "nonsurpassable", which will result in both superior resource-value relationships as well as lowering the relative resource costs. As a result, efficiency and effectiveness are achieved (See figure 5 above for more details). Porter supports competition until competitors reach industry equilibrium, thus indicating that satisfaction with current profitability is a common goal in the competitive marketplace for good competitors. Hunt and Morgan (2005) on the other hand supported the ongoing disequilibrium competition process in order to gain competitive advantage and further sustain it.

4. **Performance:** There is a slight noticeable difference between the two theories when describing a firm's performance. R-A theory indicated that superior performance is the prime goal for a for-profit firm, while Porter in 1985 accepted that moderate profit maximization is considered one character of a good competitor. Porter (1991, p. 96) explained that a firm's success should be "superior and sustainable performance... relative to [its] rivals". A logical analytical question to be asked here is why do firms continue to be in business if they received

the maximum profit for year (x) unless there is a 'superior' more challenging goal to further achieve in future years? Thus, the superior performance view explains the reality better than the 'profit maximization' term. Superior means better, higher in rank, status or quality than before or when compared to an existing competitor. This comparison always opens up a room for a firm's improvement. This is completely tied with ongoing competition process discussed in R-A theory.

5. **Strategy Success Factor:** R-A theory by Hunt and Morgan (1995, 1996, 2005) did not specify any industry structure as a context for competitive advantage. It explained that successful acquisition of resources that are valuable, rare, inimitable, non-substitutable, and nonsurpassable under the conditions of resource heterogeneity and immobility while supervised management personnel will lead to successful strategic business process, hence superior financial performance. On the other hand, Porter (1985) identified five generic industry structures that have certain strategic opportunities associated with each in order to be successful competitor in the marketplace, hence, achieve profit maximization. These are summarized in Table 5 below:

Table 5: Industry structures for successful strategies, (Porter, 1985)

Industry State	Strategic Opportunity
Emerging Industries	First Mover Advantage
Fragmented Industries	Consolidation, Alliances, Mergers and Acquisitions
Mature Industries	Focus on services, and innovation
Declining Industries	Focus on niche, and leadership
Global Industries	Multinational organization, and international sales and recognition

By Comparison, R-A theory rejects the notion of "choosing industry" as the strategic success factor toward achieving competitive advantage (Hunt and Morgan, 2005, p. 184) , but stresses on the notion of "firm effects" and argued that it is superior to industry effects because the competition process toward achieving competitive advantage happens in various market segments. Thus, the industry effects would not fully explain the details of these segments, unless firm effects are used to help the analysis of internal competition struggles among competitors. The R-A theory suggests a segment-based strategy to the Porter's industry-based one to highlight the importance of resources to achieve competitive advantage.

6. **Heterogeneity:** R-A theory used the heterogeneous assumption based on the heterogeneous demand theory, (Alderson, 1957) and resource-based theory (RBT) (Wernerfelt, 1984; Barney, 1991). In R-A terms, a consumer's tastes and preferences vary; thus, products should have various features in order to satisfy this demand heterogeneity. Moreover, firms supplying these heterogeneous products are themselves heterogeneous in terms of resources they own or can acquire, hence, firms heterogeneity exist within any given industry as well as across industries.

On the other hand, Porter (1985) indicated that firms are heterogeneous only across industries but not within. Firms within an industry have homogeneous, and perfectly mobile resources (factors of production), thus, strategic groups could be formed among these similar firms (Porter, 1980; Barney and Hesterly, 2006). He further explained that market segmentation tends to focus only on the marketing activity of the value chain, so industry segmentation will be a better predictor of heterogeneity since it combines all segmentation factors such as the consumer's different buying behaviors, production costs, and the

entire value chain activities (Porter, 1985). Porter focused on the industry or a strategic group to explain a heterogeneous firm's performance, but many other strategic management scholars argue that there is more heterogeneity of a firm's performance within a single industry than across industries (Hunt and Morgan, 2005; Barney and Hesterly, 2006). Thus, the unit of analysis should be firms rather than industries (inside out view).

7. **Efficiency:** Once again, R-A theory focuses on the intangible nature of resources in order to explain efficiency. It states that resource allocation and creation would result in an efficient (lower costs) resource portfolios through the specificity of resource picking and bundling, which will allow innovative firms to surpass competitors through a lower relative cost. This was summarized in the competitive position matrix in figure 5. The lower the relative resource costs, the more efficient a firm's operations would be, which will lead to a better chance to achieve competitive positions in the marketplace.

Resource bundling is somewhat related to the economies of scope term (Panzar and Willig, 1977, 1981). It is defined as lowering the average cost of operation for a firm in producing **two or more** products. Selling several products by one sales team will increase efficiency than if the same team is selling one product only because their sales transaction time is distributed over multiple products sold. Similarly, resource bundling (**two or more** strategic **resources**) will reduce costs (tangible and intangible) because these combined resources are used to produce **multiple** market offerings, instead of treating each resource as contributor of production. The more bundling of resources occur, the harder for competitors to understand its causal process, which creates a sense of ambiguity that increases resource inimitability. Moreover, R-A theory indicates that serving 'some' market segment(s) will provide the necessary efficiency needed since

resources will be geared toward serving these specific market segments; hence it accepts not serving all possible market segments (Hunt and Morgan, 2005). It is about 'whom we can serve and provide valuable products while maximizing resource efficiency and effectiveness' Thus, it is inward looking by matching the current and potential resources available for acquisition to the needs and wants of potential customers.

Porter (1985) on the other hand, focused on the tangible industry effects by explaining that the marketplace would be considered efficient if the number of competitors is limited to the 'good ones' matching the characteristics identified in table 5 above. Therefore, there is a sense of competition reduction in order to achieve an efficient mix between competitors and their potential profit gains. The industry market barriers are meant to control this competition-profit dynamism in order for 'good' competitors to gain their acceptable maximized profits according to (Porter, 1985). He stated that lowering the costs of the significant operations would increase the efficiency of the value chain, and increase a firm's performance accordingly.

For example, sharing the costs of material for the significant value activities between different business units inside the firm will reduce the cost associated with these activities, and lead to competitive advantage as a result. If the cost of sharing is less than the advantage associated with it, sustainable competitive advantage will occur especially if competitors are unable to duplicate such a sharing process. Economies of scale were also listed in Porter (1985) as a viable business cost reduction driver. It "arises from the ability to perform activities differently and more efficiently at a larger volume, or from the ability to amortize the cost of intangibles such as advertising and R&D over a greater sales volume" (Porter, 1985, p. 70-71). It is reducing the cost per unit, while increasing the

production scale for a single product category.

8. **Effectiveness:** What is considered effective according to R-A theory is the *successful* attempts of resource allocation and creation, and the successful *value* creation mechanisms through valuable market offering to consumers that satisfies their needs and wants. Hunt and Morgan (2005) indicated in the competitive position matrix that effectiveness increases when the firm moves from a competitive disadvantage position through the indeterminate position until it finally arrives at a position of competitive advantage. This occurs through continuous innovation attempts to overcome the competitive gap between the firm and its targeted leading competitor. As a result, firms who successfully went through this competitive process will provide a higher relative product value to consumers, which represent an effectiveness advantage.

Porter (1985) highlighted the nature of industry effectiveness through the reduction of competition and limiting them to 'good competitors' who can stimulate the competition process rather than hinder it. Industry effectiveness is at risk if the percentages of bad competitors increase because no common goals among competitors will be valued, nor is there a sense of profit share acceptance without vigorous attacks. Therefore, Porter introduced the industry barriers to control the industry effectiveness and limit competition to good competitors. He further indicated that management plays a key role in increasing a firm's effectiveness through their continuous control over primary and secondary value chain activities in order to successfully deliver value to consumers.

Other theoretical assessments on why R-A theory is better suited for this sport thesis than other various views of resource management can be briefly summarized into three points. First, strategic management scholars were divided between the complementary views of strategic management that both RBT

and Porter provided without a single resource theory that fully explains the performance of firms within a marketplace. Some researchers explained that this single theory should be both "outward and inward looking simultaneously" (Hunt and Morgan, 2005, p. 194). It was not until the Resource-Advantage Theory of Hunt and Morgan (1995, 1996) that both the internal and external competitive advantage environments came together under one theoretical foundation.

Secondly, R-A theory highlights and explains the different levels of resources in more depth than other resource theories. This provides a clearer distinction for this thesis by differentiating between the overlapping used resources and an acceptable level of accuracy. As it was explained earlier, each resource related theory or model had more limitations when compared to R-A theory. This theory is a positive competition theory that has implications on normative sport marketing and management research. It adds direction and provides a framework for applied research (Hunt and Morgan, 2005).

Thirdly, from a sport practical perspective, the Transaction Cost Theory explains the market level analysis (e.g. league level), while Agency Theory and Resource-Based Theory highlight the individual level of firms from different perspectives (e.g. agent vs. principle, internal resources...etc.) On the contrary, Resource-Advantage Theory explains the team level analysis in a competitive market where competition rises and highlights the process of improving low performances until it is equal or superior to competitors.

How is the comparison between R-A and Porter's over competitive advantage can be linked to sport management? The field of sport management in general and across teams in specific, is dependent on resources that are 'intangible' in nature. Thus, the R-A competitive advantage view on the eight major domains

in previous comparison discussed earlier will more likely benefit sport management. Sport teams strive for higher levels of performance capitalizing on the intangible resources they acquire or build internally. These intangible resources can be either human, financial, relational, organizational, and informational (Hunt and Morgan, 1995, 1996, 2005). Therefore, sport managers will more likely try to create value by 'resource picking' (Hunt and Morgan, 2005) these resource categories to create a resource 'portfolio' or team to achieve strategic success. Obviously, team sport is pro-competitive across clubs within the same league domestically, or across leagues at national competitions. The heterogeneity of these clubs allows for variability of competition and performance results to happen as the resource intangible efficiency and effectiveness differ from one club to another.

2.8   Sport Management and Marketing

Prior to highlighting the sport management in relevant literature, the classical and neo-classical theories by Smith (1776) and Marshall (1890) provide the 'basic' understanding of primary 'input versus output' argument. Smith (1776) explains that management is the source of maximizing the outputs and minimizing the cost of inputs associated with production process. These inputs are defined around three basic resources of land, labour and capital (Smith, 1776) in a given market organization business structure. Later on in the 1800s, Marshall (1890) elaborated on Smith's classical theory and added the value of goods to the consumers, perfect competition and information seeking, and maximization of utility. A common premise between these two foundational major theories around management of resources is the 'tangibility' of resources. What is a resource? The broader view around what a resource is beyond the classical and neo-classical theories started with seminal work of Penrose (1959) explaining the growth of a firm from a set of resources. Wernerfelt (1984) explained

that could be any tangible or intangible assets which are linked to the firm. Examples of such resources can be "brand names, in-house knowledge of technology, employment of skilled personnel, trade contracts, machinery, efficient procedures, capital etc" (Wernerfelt, 1984, p. 172). Furthermore, Doherty (2011, p. 363) implied that "a key construct of R-A theory stipulate the firm's resources are not only limited to land, labour and capital, as in neoclassical theory but include... financial, physical, legal, human, organizational, informational and relational resources". There are six intangible resources with physical resources as the only tangible one. Thus, these intangible resources are "important to the success of a firm"(Doherty, 2011, p. 363). This thesis will focus on the intangible set of sport resources affecting on-field performance for European sport teams.

In sport management, sport teams provide an 'intangible' entertainment service (Woratschek, Horbel and Popp, 2014) to utilize the time, effort, and emotional attachment of sport fans or consumers of sports. Hence, the resources used to deliver this sport service to fans are intangible as well. Building on the R-A theory framework (Hunt and Morgan, 2005), intangible resources are heterogeneous and vary by organization in which they are used to improve the primary objective of performance whether that is by winning or profit maximization (Brunkhorst and Fenn, 2010; Szymanski, 2003), which sport team managers and directors strive for respectively. Within sport management literature, football team managers desire higher on-field performance such as winning, higher points, goals for, and fewer goals against to name a few examples (Wright et al., 1995; Kuper and Szymanski, 2014). On the other hand, team directors such as upper management want to achieve higher financial stability for their sport team (Rottenberg, 2000; Szymanski, 2003). To achieve either of those objectives or both, football managers and/or directors have to utilize a set of sport resources. Therefore, a firm, or a team within this sport management context is a combination of collective resources that are cohesively combined into

some determined resource portfolios for the sole purpose of serving specific market segments by satisfying their needs and wants with valuable goods and services. The categorization of such resources can vary, but this section will focus on sport resources of human, informational, relational, organizational and financial to conclude the literature review. Appendix [A-E] highlights the indicators of these sport resources and ways to operationalize them for this thesis.

2.8.1   Human Resources

The sport team success whether it is higher on-field or financial performance (Szymanski, 2003; Garcia-del Barrio and Szymanski, 2009) depends on its people (Wright et al., 1995; Cunningham and Sagas, 2004). The human resources in sport, as any other organization, can be complied of many human resource individuals such as sport managers and players (Wright et al., 1995), support staff (Carmichael et al., 2011), and board members (McDonald and Sherry, 2010). These individuals "can directly affect the outcome of individual matches,and eventual seasonal outcomes,through decisions regarding team selection and tactics, within-game substitutions, purchase and sale of players to reconstitute squads, as well as developing team work,cohesiveness and morale" (Carmichael et al., 2011, p. 3). Research within the sport management literature explains that sport managers and team players (i.e. squad) are directly affecting to on-field performance of a sport team (Millar and Stevens, 2012). Therefore, human resources for this thesis will follow the primary mainstream of research for this resource category of represented by playing squad and sport coaches or manager (Demil and Lecocq, 2010).

Sport management literature highlighted this category of resources as one of the reasons of a sport organization's competitive advantage (Smart and Wolfe, 2003; Wright et al., 1995). From a theoretical perspective, premise eight in R-A theory

indicates that the role of management in organizations based on a resource perspective is to "recognize and understand current strategies, create new strategies, select preferred strategies, implement or manage those selected, and modify them through time" (Hunt and Morgan, 1995, p. 7). Further, human resources are considered one of the strategic resources leading to higher competitive advantage and performance (Hunt and Morgan, 2005). De Bosscher, De Knop, Van Bottenburg, Shibli and Bingham (2009) did an empirical study on six nations (Belgium, Canada, Italy, Netherlands, Norway and United Kingdom) in order to find out the forms of success in elite sport at the Olympic level. One of the results of this study was that the performance success drivers of the coach's development was an "under developed area" in these six nations and they believed that nations may gain competitive advantages in sports from it (De Bosscher et al., 2009, p. 131).

Team managers or coaches mirror the CEO character in business firms (Frick and Simmons, 2008). They control the recruitment of players as well as the firing process, and implement the teams playing strategies for the season and during match tactics. They are motivational leaders who positively or negatively influence a player's performance and always face the consequences related to that in front of all media and fans alike. Simply put, a manager or a coach is the "brain of the team" and the players are his tools to achieve higher team performance (financially or field). Moreover, research on resource theories such as RBT highlighted the effect of a coach's quality on the performance of sport teams (Harris and McMahan, 2008; Sirmon, Gove and Hitt, 2008; Smart and Wolfe, 2003). The experience, skills or quality of managers are used interchangeably in literature and are defined on three criteria; the years tenured with the current team, the number of coaching years in first-division leagues (Lechner and Gudmundsson, 2012), and more recently the cumulative winning percentage across the manager's entire career (Bashuk and Intelligence, 2012), which is represented in

practice by success-ratio as manager in football sport data generation sites such as Transfermarkt.

It is natural that these skillful managers follow specific routines and training (Lechner and Gudmundsson, 2012) in order to nurture and enhance their player's co-ordination skills for the betterment of team performance. These sport group-training routines or executions are considered higher order tacit knowledge that acts as a strong predictor of team performance (Berman, Down and Hill, 2002) and their repetitions will develop into a certain or preferred manager's playing style that usually influences the team's strategy (Wright et al., 1995). The combination of all of these success factors will improve the performance of individual players, team managers, and overall organization (Millar and Stevens, 2012; Lechner and Gudmundsson, 2012).

The sport literature also emphasized the importance of team managers or coaches to enhance the physical professional status of a sport team (Millar and Stevens, 2012; Frick and Simmons, 2008). Furthermore, the literature on sports focused on relationships between team performance and managerial quality (Frick and Simmons, 2008), a manager's preferred playing strategy (Wright et al., 1995), a manager's experience (Tarlow, 2012), and managerial change (Audas, Dobson and Goddard, 2002). More specifically, Lechner and Gudmundsson (2012) highlighted that the influence of managers in the trade-off between internally developed resources (internal players) and the externally bought ones. Simply put, they looked at which resource allocation decision has higher explanatory power on performance. However, this research only studied the "make-or-buy mix" (Lechner and Gudmundsson, 2012, p. 292) instead of studying the manager's decisions regarding "all" resources available for deployment or disposal during a season. Therefore, team managers will moderate on-field performance outcomes through management of all resources available to sport teams.

54

2.8.2 Informational Resources

Lussier and Kimball (2009); Kretschmann et al. (2012) indicated that informational resources are important when dealing with a sport team that requires sport managers to have technical skills to deploy and understand this category of resources to improve sport a team's outcome. What is considered sport informational resources? Kretschmann et al. (2012) stated that game statistics or indicators are informational tools, which should be managed, kept and understood by sport team managers. This will provide a learning platform for these sport managers to improve outcomes (Kretschmann et al., 2012). Managers need to gather all kinds of information to perform positively and stay competitive. They can do this by taking advantage of the new indicators available (Lussier and Kimball, 2009). Moreover, within sport games, the informational input is driven by a player's actions or indicators (Kretschmann et al., 2012). The speed of which such information indicators are analyzed by sport managers will be crucial to deliver the final service to consumers of sports 'fans'.

Football analysts often indicate that a team is following a defensive or offensive informational tactic throughout the season, thus, we see a manager in football prefers a 4-4-2 instead of 4-3-2-1 tactic and sometimes switches from one to another depending on the results of the match. Oxford Dictionary of Sport Sciences acknowledges the overlapping between strategy and tactics in sports and defines them as "the overall game plan of coaches and managers [in sports] to achieve an aim" (of Sport Sciences, 2013). These tactical decisions are considered intangible informational resources that are classified as extremely strategic since they are immobile, heterogeneous, and inimitable by other firms (teams) (Barney, 1991). These balance or improve on-field performance and are highly used in sport literature (Wolfe et al., 2005). Managers change the playing formation of their teams by using different informational tactics between regular seasons and knockout games (i.e. playoff). Sport

teams play more defensively during knockout stages (e.g. Champions League) than in the regular season (Teramoto and Cross, 2010). Moreover, strategic playing styles in football are commonplace to fans; such as the Tiki Taka played by Barcelona FC described with short, fast passes of the ball, continuous movement around the soccer field, and maintaining high levels of ball possession. The same playing style was transferred to Bayern Munich FC when they signed a new coaching agreement with Barcelona's legendary Spanish Coach Pep Guardiola in July 2013.

Sport managers follow certain trade-offs and informational decisions when playing in home versus away games. Dennis and Carron (1999) indicated that games played on a team's home field, usually resulted in higher scoring results for that home team, which is commonly discussed as home-field advantage (Rogerson, 2014). While Samagaio et al. (2009) explained that sport managers tend to focus on the objective of winning regardless of the shareholder's opinion that they should of focus on profit generation. There is also a changing in tactical play between regular seasons and knockout games. Sport teams play more defensively during knockout stages (i.e. Champions League) than in the regular season (Teramoto and Cross, 2010).

Sport team managers usually favor on-field performance over financial gain of sport clubs (Samagaio et al., 2009), thus, winning championships is of a greater importance to them. In order to achieve such an objective, to which playing style should sport team managers adopt? "Defense wins championships" (Teramoto and Cross, 2010, p. 2). This view is common in the sport of football (Hargreaves, 2010).Gomez, Lorenzo, Ibáñez, Ortega, Leite and Sampaio (2010, p. 165), citing Otto (1998), indicated, "defenses may generate a more cohesive team as well as increase team communication, responsibility, and self-confidence. Also, defense in and of itself does not win games, but if the team in defense keeps the opponent from scoring, the team increases its possibilities for winning the game" This echoes the argument made byDennis and

Carron (1999) that defensive tactics during home and away games is one of positive informative strategies to follow in order to improve on-field performance.

2.8.3 Relational Resources

Relationship marketing (RM) has been defined in marketing literature as "all marketing activities directed towards establishing, developing, and maintaining successful relational exchanges . . . through developing relatively long-term relationships with such stakeholders as customers, suppliers, employees, and competitors" (Hunt and Morgan, 1997, p. 431). Furthermore, RM is classified in strategic management literature as one of the strategic resources under the relational resources category in R-A theory (Hughes and Morgan, 2007; Hunt and Derozier, 2004; Hunt and Lambe, 2000; Hunt and Morgan, 1997) because it is immobile, heterogeneous (Hunt and Morgan, 1997) and creates value for both consumers and organizations (Gouthier and Schmid, 2003).

Hunt and Derozier (2004); Hunt and Lambe (2000); Hunt and Morgan (1997) indicated that RM cannot be owned, sold or traded among firms, and this constitutes the immobility nature of this strategic intangible resource. The heterogeneity of RM comes from the strategic alliances made between different stakeholders to enhance the firm's efficiency and effectiveness (Hunt and Lambe, 2000) while Gouthier and Schmid (2003) argued that RM creates value since it allows consumers to be strategic partners for firms by implementing their feedback and inputs into the production process. Therefore, RM will lead to sustainable competitive advantage and superior financial performance (Hunt and Morgan, 1997).

The relationship with fans in sports was explained in relationship marketing literature. Customer relationship management (CRM) has been an integral part of the strategic relationship marketing since it was first defined by Berry (1983, p. 25) as "attracting, maintaining, and enhancing customer relationships". For example, Gouthier

and Schmid (2003) stated that service firms have to invest heavily in CRM in order to achieve sustainable competitive advantage. Moreover, Gouthier and Schmid (2003) viewed CRM as a strategic resource leading to competitive advantage from a resource-based perspective because it allows customers to employ different roles such as consumers of service and product, or members of the organization (Grönroos, 2004). "The more we move from a transaction-oriented perspective towards a relationship-oriented perspective, the more it becomes evident that customers and customer relationships can be seen as essential resources" (Gouthier and Schmid, 2003, p. 120). Thus CRM is grounded in both RM strategy and R-A theory (Hunt and Derozier, 2004; Hunt and Lambe, 2000; Hunt and Morgan, 1997) as a strategic driver for RM.

In the sport marketing, sport management, and advertising literatures, customers are often described as fans or spectators interchangeably (Koenigstorfer et al., 2010; Couvelaere and Richelieu, 2005; Pitts and Slattery, 2004; Walliser, 2003; Cornwell and Maignan, 1998). Thus, building a strategic relationship with fans based on RM and CRM is called fan relationship management (FRM) (Adamson et al., 2006), which is viewed as a strategic resource in order to increase the fan's identification (Sutton, McDonald, Milne and Cimperman, 1997). Fan identification is defined as "the personal commitment and emotional involvement customers have with a sport organization" (Sutton et al., 1997). It will minimize the negative effect of team performance in the long run if it happens; for example, Breslin and Safer (2011) indicated that the Boston Red Sox won the world championship series in 2004 after an 86 years drought, but fan identification during all those years did not decrease, but rather they supported the team vigorously (Sutton et al., 1997), which exemplifies how fans can be a strategic resource for higher performance in and/or off the field. The sport product is sold for four target markets (Mason, 1999) namely fans, media business, communities and private sponsors.

1. **Fans** who attend sport matches, or view them on media outlets such as television or online, and encourage purchasing the league and/or teaming goods.

2. **Media businesses** such as national television channels to purchase the broadcasting rights for national distribution for *fans*.

3. **Communities** who host the physical locations and facilities of local teams such as training arenas or home stadiums for *fans* to attend

4. **Private sponsors** such as major corporations who are interested in sport leagues to increase gate ticket sales, and purchase the team's sport sponsorship agreement in order to exploit the team's *fan* base.

2.8.4   Organizational Resources

R-A theory explains that organizational resources are embedded into the firm, cannot be copied or imitated by others, immobile and heterogeneous (Hunt and Morgan, 2005). In simple terms, the organizational history and collection of historical successes, which define organizational resources for this research context, are difficult or impossible to transfer to another organization (O'Reilly and Nadeau, 2006). This unique resource characteristic of the firm (Barney, 1991) makes it strategic resource leading to competitive advantage.

In sport management, the organizational resources such as a club's heritage, and historical performance in leagues are highly tied to sport organizations (O'Reilly and Nadeau, 2006). Wins are more likely to bring more wins explained as winning streaks (Szymanski, 2003), thus, teams with higher historical winning performances would probably have better on-field performance than another team with lower historical performance (Yiannakis, Selby, Douvis and Han, 2006). This historical performance can be divided into domestic (cup and leagues), European (Champions, Super Cup, and Europa Leagues), and international (Club World Cup). Why are organizational

resources so important? Hunt and Morgan (2005, p. 188) stated that organizational resources are complex in nature, and "less vulnerable to substitution and imitation than human resources".

2.8.5 Financial Resources

Szymanski (2003); SportBusinessGroup and Jones (2013) indicated that financial resources come from various revenue streams such as television income, annual ticket sales, concessions, sponsorship, and merchandising. These collect the annual budget of sport teams with Lussier and Kimball (2009) explaining that the budget is an indicator of the financial resources available to achieve the sport team objective at a given season. Doherty (2011) highlighted that financial resources, for example, budget, are decisive to positively compete within a marketplace. Such financial resources can be explained by annual financial statements (Doherty, 2011) and/or annual financial value of the firm or company (SportBusinessGroup and Jones, 2013). The majority of financial resource indicators are spent on salaries of players and staff with minimal charges for administration (Kuper and Szymanski, 2014; Benijts, Lagae and Vanclooster, 2011; Tomkins et al., 2010). To be more specific, sport teams that spend the bulk of their financial resources on strategic valuable players or core roles within a team "are able to leverage such investments into significantly improved performance" (Humphrey, Morgeson and Mannor, 2009, p. 48).

Sport literature has highlighted the correlation between total financial spending (transfer fees and/or player's salaries) on players and on-field performance arguing the higher of the former will accordingly increase the latter (Kuper and Szymanski, 2014; Tomkins et al., 2010). Tomkins et al. (2010) questioned if costly team squad will improve on-field performance for sport teams? Salary spending is positively affecting on-field performance and rich teams is more likely to maintain this success overtime when compared to other clubs with less financial budgets (Carmichael et al., 2011).

For example, in the English Premier League 2004-2005 season, Chelsea Football Club under the ownership of billionaire Roman Abramovich (2003-present) won the club's first league title since 1954-1955 season, and the third in the club's history. The club also won four Football Association (FA) Cups, one Champions League (CL) and one Europa League (EL) just in the last ten years under the Russian billionaire owner. Moreover, higher monetary expenditures do not only derive on-field performance for clubs in well-established leagues such as EPL (Carmichael et al., 2011; Tomkins et al., 2010), but also in intercollegiate competitions such as NCAA (Sparvero, Warner et al., 2013)

This category of resources is not only about the buying or selling of resources (e.g. players) during transfer windows (Szymanski, 2003), but also about stock returns or prices (Samagaio et al., 2009), and greater income (Pinnuck and Potter, 2006) of sport clubs. Therefore, sport clubs "behave as brands... to exploit the sponsorship plan and sale of products, together with the commercialization and sale of audio-visual and television rights of sporting events" (Callejo and Forcadell, 2006, p. 51). This also includes, "distributions from participation in European club competitions, sponsorship, merchandising, and other commercial operations...match day ticket and corporate hospitality sales" (SportBusinessGroup and Jones, 2013, p. 2) . Walliser (2003) indicated that broadcasting and sponsorship revenues derive most of the revenues in sports today. For example, Criddle (2016) stated that the revenue streams of English Premier League (EPL) in 2016-2017 will be comprised of a minimum of 100 million pounds from broadcasting and commercial revenues for each EPL team, 6.6 million pounds of sponsorship and kit manufacturing deals, and 7 million pounds for match day sales. These figures increase dramatically for upper level teams in EPL. For example, teams on top of EPL table during 2015-2016 season earned 77 million pounds on average from sponsorship and kit manufacturing deals only (Criddle, 2016). Advertising is contributing to the financial well-being of sport clubs as well

(Walliser, 2003). For example, Real Madrid in 2004-2005, made \$55 million in revenue from advertising through the mean of sponsorship alone (Callejo and Forcadell, 2006). These advertising avenues include the following:

1. *Exploitation of soccer player's image rights in the advertising market to enhance club's trade mark value*

    - *Example: Real Madrid could recover David Beckham's transfer fee of \$42 million in just two or three years, and this simply from the income of exploiting his image*

2. *Advertising hoardings, advertising on the video scoreboards, seats or press conference and interview displays*

(Callejo and Forcadell, 2006, p. 56-60).

Wolfe et al. (2005) indicated that one of the resources that sport teams compete on is sponsorship by attracting potential sponsors in order to achieve higher on-field performance. Amis et al. (1997) explained that higher corporate performance measures such as competitive advantage positions would come from successful exploitation of sport sponsorship agreements between a sponsor and sponsored and lead to higher performances across many *criteria* including higher sales, product awareness, financial power, corporate image.

What would attract a new sponsor or advertising company to a given team? European football clubs with superior on-field performances gained more attention from potential sponsors and therefore signed sponsorship deals that were worth millions of dollars (Smith, 2014; Szymanski, 2003). This relationship between sponsorship and on-field performance is not only in European football. Pinnuck and Potter (2006) stated that on-field performance of sport teams participating in the Australian Football League (AFL) is positively influencing the short and long-term sponsorship opportunities of these teams. The study of Samagaio et al. (2009) proved that English

teams performing well in UEFA club tournaments enjoy higher financial well-being than other English teams that did not participate in such competitions (both are highly correlated with a 0.95 correlation estimate). Furthermore, Bell et al. (2012) showed that successful results of on-field team performance affect the stock returns for sport teams in EPL. Therefore, financial resources such as "distributions from participation in European club competitions, sponsorship, merchandising, and other commercial operations...match day ticket and corporate hospitality sales" (SportBusinessGroup and Jones, 2013, p. 2) are important to be considered for higher on-field performance.

This chapter highlighted two domains of literature. First, sport literature was reviewed by explaining the general sport industry as well as sport economics comprising the operation and design of European leagues that is characterized as an open league system which allows for relegation and promotion to occur. Moreover, to highlight this domain of literature further, the thesis explained the views of previous sport marketing and management research around five categories of sport resources. These are human, informational, relational, organizational and financial resources. Secondly, the framework, foundational premises, and competitive advantage views of R-A theory were explained in details. Moreover, this section of theory literature was concluded by comparing and contrasting R-A theory with both Resource-Based Theory (Barney, 1991) and Porter's competitive advantage (Porter, 1980, 1985). In summary, R-A theory was chosen since it provided a resource framework, explained what these resources were, and advocated competition as mean to improve firm's performance.

3 Resource Model of Sport Club Management

This thesis approaches the issue of resource prioritization and allocation of sport resources in professional European clubs using the resource-advantage theory framework focusing on five resources "human, financial, relational, organizational and informational" Hunt and Morgan (1995, 1996, 2005) within the field of sport management. This approach is two folds. First, the conceptual approach will group the potential resource category indicators to on-field performance of European football clubs. The choice to use a broad list of resource indicators compressed into potential factors affecting the outcome of European football teams has support in sport marketing and management literature (O'Reilly and Nadeau, 2006). Secondly, to study the effect of these resource factors on on-field performance by creating four models Lechner and Gudmundsson (2012) to answer the fundamental research question of which resources have the highest influence on on-field performance that allow sport team managers to make decisions around prioritization and allocation of these sport resources accordingly. Therefore, this section will (a) explain why on-field performance was chosen as the outcome for this study; (b) introduce the sport resource management from R-A theory resource structure.

3.1 On-field Performance

Sport teams are considered business firms that are concerned about their existence Rottenberg (2000); thus, they carefully monitor performance and actively strive to improve it with possible management strategies (Hunt and Morgan, 2005). Sports teams are a particular representation of 'performance' teams that are responsible for the main product or service of an organization: the main product is a 'performance' such as ... a game in sports (Lechner and Gudmundsson, 2012, p. 285). The performance of sport teams discussed in sport literature is normally classified into two main

streams: on-field and financial performances (Brunkhorst and Fenn, 2010). Therefore, sport clubs differ on their chosen survival or existence strategies between on-field winning and profit generation (Garcia-del Barrio and Szymanski, 2009; Szymanski, 2003)

There are various measures of on-field performance such as number of championships won Andreff (2011); Szymanski (2003); Rottenberg (2000), relegation and/or promotions Andreff (2011), and winning streak Szymanski (2003). The on-field performance for this research thesis will be combined factor of *Total Points, Goal Difference, and Goals Scored* obtained at the end of each season Carmichael et al. (2011) within the European football leagues of Italy, England, Spain, and Germany.

3.1.1 Why on-field performance?

There are two perspectives to consider here, which are management and marketing views. When considering the sport team's management perspective, there are two individuals to choose from: clubs' owner or team manager. Club owners tend to focus more on the clubs revenue or profit generations Szymanski (2003), while team managers center their efforts toward higher on-field results, Samagaio et al. (2009) such as more winning, more points, and higher table rank. Sport clubs participating in first division European leagues get lots of financial revenues from various streams such as television broadcasting, match day tickets and concession sales and sponsorship of team kits (SportBusinessGroup and Jones, 2013). Therefore, European teams who get relegated to lower level leagues will lose huge financial revenues since major marketing communication outlets such as advertising or sponsorship are more interested in higher exposure levels coming from the major soccer leagues in Europe (Walliser, 2003). Therefore, higher on-field performance within such leagues is important.

Fans also prefer a winning team to a losing one (O'Reilly et al., 2008), thus, the marketing perspective will also agree teams who improve on-field performance will

Table 6: A decade of shirt deals. Source: Forbes (2014)

Winning Season	Trophy type	Club Name	Sponsorship Season	Sponsor Name	Sponsorship amount (in $ millions)
2003/2004 Invincible	Premier League	Arsenal	2005	Emirates	180
2005/2006	Champions League	Barcelona	2006	Nike	190
2006/2007	La Liga	Real Madrid	2007	Bwin	30/season
2007/2008	Champions League	Manchester United	2009	AIG	130
2010	Bundesliga	Bayern Munich	2011	Adidas	289
2011	La Liga	Real Madrid	2012	Adidas	40 /season
2012	Premier League	Manchester United	2013	General Motors	559

potentially increase the likelihood of keeping their fans interested, and therefore purchase their sport products and services. This was evident in the argument made by Smith (2014) in Table 5 that European teams with higher levels of on-field performance in prior seasons signed higher shirt sponsorship deals with global sponsors. In general, sponsors are more attracted to winning teams. For example, the football teams of Arsenal, Barcelona, Real Madrid, Manchester United, and Bayern Munich secured massive financial sponsorship deals the season after their championship wins on either domestic or European venues.

3.2 Sport Resources (Original Indicators) and Research Questions

Resources available within sport are still broad. Sport teams have a substantial amount of resources to use during a season including but not limited to financial spending on physical training and equipment, recruiting and firing of staff, spending on club academy, and budget for recruiting new players. Some examples of sport resources, among many others, are financial budgets Kuper and Szymanski (2014), skillful players or managers Lechner and Gudmundsson (2012); Millar and Stevens (2012) and new sponsorship agreements (Chadwick and Thwaites, 2004). A micro-level study of this nature will add depth to both theory and sport research with regard

to the analysis of managing these various resources (Wernerfelt, 2014). Hunt and Morgan (2005, p. 187) explained that a prioritization study would be a "tremendous potential for further investigation...and provide guidance to managers [about] value contribution of resources". Therefore, the resource-advantage theory of competition (R-A) would potentially provide an important framework for this empirical research to explain the sport clubs' competitive advantage and on-field performance (Hunt and Morgan, 1995, 1996, 2005).

This theory as discussed earlier indicates that there are seven categories of resources available to firms, which are physical, human, informational, organizational, financial, legal and relational resources. In order to excel at what they do, firms should give a great attention to these resources and hire the right management. The manager's decision is to "recognize, understand, create, select, implement, and modify" Hunt and Morgan (2005, p. 155) these resources accordingly in order to achieve a position of competitive advantage within a marketplace.

For this research, the legal and physical resources were eliminated. The legal resources such as the rules and regulations of sport clubs, trademarks, patents, and licenses that give the rights of ownership of brands and logos are extremely confidential. Thus, acquiring such data will be difficult to have. More importantly, the legal resources is not likely to improve or hinder on-field in sport literature especially since sport federations governing the sport management treat all teams equal in order to provide an equal opportunity to win championships (Rottenberg, 2000).

The physical resources were also eliminated from the resource categories considered for this research due to various reasons. First, R-A theory of competition excluded physical resources from the strategic list of resources arguing that they would have a minimal influence on a firm's performance when compared to other resources. Secondly, some research suggests that higher on-field performance will lead to stadium sponsorship. Thus, the end of season on-field performance is the independent

67

variable rather than dependent, which is opposite to the major view of this thesis. Smith (2014) indicated that European clubs with higher on-field performance are more likely to attract sponsors for their physical venues regardless of stadium age. For example, Arsenal FC was able to attract Emirates Airlines as a major sponsor for their newly built Emirate stadium after their 2003-2004 invincible season (Demil and Lecocq, 2010). Thirdly and most importantly, the variables related to physical resources such as stadium capacity, location and number of home games is rather fixed with minimal to no variability. Therefore, researcher opted to conclude that physical resources might play a minor role in increasing on-field performance for football sport clubs participating in European national leagues, thus, excluded it as it is also consistent with R-A directions when considering a firm's strategic performance.

On-field performance is used in sport literature as an outcome or dependent variable that results from many certain activities or independent variables such as scoring goals, winning, draw or losing, offensive, or defensive play, total points, goal difference, and goals scored (Bell et al., 2012). However, the play-off performance is mostly occurring in North American leagues Andreff (2011); Szymanski (2003)such as NHL and NBA, but it is not discussed here, as the focus of the thesis will be on European football leagues only that do not use play-off systems within their national leagues (Andreff, 2011). The on-field performance as we discussed above is multifaceted depending on various resources leading to it(Bell et al., 2012). Thus, in order to discuss the relevant literature to the research questions identified, each category of resources in R-A theory will be explained within the context of European football leagues.

The potential resource antecedents to on-field performance of football teams will be grouped in relation to these different categories of resources. Including too many independent variables that *might* affect the dependent variable (i.e. on-field performance) was used in sport literature (O'Reilly and Nadeau, 2006). They cited Whetten (1989, p. 490) that when researchers "begin to map out the conceptual landscape of

68

a topic, they should err in favor of including too many factors, recognizing that over time their ideas will be refined" (O'Reilly and Nadeau, 2006, p. 313).

Overarching RQ: How do sport resources affect on-field performance?

The sport research context provides a level of variability to study the different effects of resources on on-field performance across various sport leagues with similar structure for consistency. More importantly, the unit of analysis of teams within the four European leagues provides a level of variability within some resource categories. For example, clubs such as Manchester United, Real Madrid, Barcelona, and Bayern Munich enjoy higher levels of financial income, which would be expressed with variable financial resources than other teams within their domestic leagues respectively. Therefore, we can address the different effects of these resources on on-field performance among these clubs/teams accordingly. There is a confirmation from R-A theory that such a study might add positive knowledge to the theory. Hunt and Morgan (2005, p. 187) asked, "How resources differ in their effects on performance in different situations?" under the Future Research Directions section of their review. Therefore, a vital research question to investigate is:

RQ 1: Which sport resources have the highest influence on teams on-field performance?

The answer to RQ 1 will advance both theory and practice of sport together. Knowing the resource with the highest influence is not the sole reason for higher team on-field performance. Therefore, ranking resources in a list according to their relevant importance will surely prioritize efforts of sport managers. Moreover, Hunt and Morgan (2005) stressed the importance of resource allocation, but communicated that prioritization of resources should be studied first. Tomkins et al. (2010) stated that "Tactics, motivation, fitness and luck" are significant, but questions such as "Which managers have excelled ... and who blew their budgets on bad buys?"

is extremely decisive in determining the effect of resource allocation in player's investments on a team's on-field performance especially (after) the summer and winter transfer windows are closed. As a result, a realistic resource management structure and resource allocation mechanism will likely occur. Therefore, the second related research question to examine will be:

- **RQ 2: What is the prioritization structure of sport resources affecting on-field performance for sport teams?**

Sport teams are firms composing the sport industry, and the categories of resources they employ or acquire are the raw materials for the sport product advertised to their consumers (e.g. fans) (Rottenberg, 2000). Sport clubs in European football operate in open market leagues Szymanski (2003); Andreff (2011), which would benefit from prioritization of resources to strategic core roles in a sport team to derive higher team on-field performance (Humphrey et al., 2009). However, what classifies a resource category to play a major or core role in improving on-field performance? Strategic resources playing major or core roles on on-field performance should:

a. Encounter and overcome more of the problems within the team,

b. Have a greater influential relationship on sport team on-field performance, and

c. Play a central role (Humphrey et al., 2009, p. 50)

These resources could be any resource from field players to top management within the hierarchical categories of resources within a sport club. If a role within a sport club is considered important or strategic for on-field performance then "it is important that this role is staffed with higher quality [resources]" (Humphrey et al., 2009, p. 53). If such resources drive the production of the sporting product Rottenberg (2000), then financial resources should also be considered important, strategic, or core role for

the success of sport teams and a positive driver toward higher on-field performance (Carmichael et al., 2011).

The sport resources that compile the conceptual model for this dissertation which are highlighted by the previous three research questions are as follows:

3.2.1 Sport Human Resources Category

Some teams do not generate high revenues at the end of each season, yet they perform favorably on the field compared to other teams with greater monetary resources that may not qualify for play-off for example. Therefore, the difference between a winning and a losing team is driven by something else such as the effective role of team manager during season matches to make players deliver on what they were supposed to do. Managers face a tremendous amount of resources to manage every season, and they need all their management tools to make the right decision making-mix with regard to their teams. There is still so much knowledge to discover on how these resources are being assessed by sport team managers, therefore, an important core research question to investigate in this thesis is:

The majority of European football teams' expenditures come from investments on players (Tomkins et al., 2010; Kuper and Szymanski, 2014). The benefits sport players bring to sport teams are extremely valuable and highly appreciated by team managers (Lechner and Gudmundsson, 2012). More importantly, they are considered the feedstock for the sport production process (Rottenberg, 2000). The human resources such as players' skills and talent brought are not only highlighted in sport literature, but also in research within resource theories.

Resource theories' scholars such as Conner and Prahalad (1996); Hunt and Morgan (1996); Barney (1991) emphasized that tacit knowledge plays a central role as a strategic resource toward achieving competitive advantage. More specifically, Conner and Prahalad (1996, p. 477) indicated that knowledge-based resources such as tacit

71

knowledge are the "essence of the resource-based perspective". Amis et al. (1997, p. 82) posited that, "the more tacit and intangible a resource is, the longer its probable duration as a source of competitive advantage".

It is not only that tacit knowledge is classified under the R-A theory as a form of human resources available for firm's disposal (Hunt, 2011; Hunt and Davis, 2008; Hunt and Derozier, 2004; Hunt and Morgan, 1995), but it is also considered strategic to yield competitive advantage (Hughes and Morgan, 2007). One aspect of human resources explained by R-A theory is the level of skills employees have at a given firm (Hunt and Morgan, 2005). Dribbling is maneuvering with the ball and surely considered a playing skill that will allow football players to pass a defender, which could create a goal opportunity. Therefore, it should be considered a human resource variable. These human skills are strategic, valuable and difficult to imitate by others Amis et al. (1997) especially since they are ambiguous and socially complex under R-A theory (Fleetwood, 2005; Hunt and Morgan, 1995). Same logic applies in sports where players' skills, talent and physical abilities are essential resources leading to competitive advantage for sport teams (Wolfe et al., 2005; Wright et al., 1995). More importantly, Smart and Wolfe (2003) found out that 67% of winning variance was explained by player resources.

3.2.2   Sport Informational Resources Cateogry

The informational resources in the conceptual model will be focusing on the defensive, offensive or balanced play. The characteristic of sport team or football manager are determined by these three tactical options. WhoScored, the official football analysis site highlights these informational indicators as resources for European football clubs to capitalize on leading to higher tacit knowledge, which is classified under R-A theory as strategic (Hunt and Morgan, 2005). The majority of the European strong football teams are considered the most defensive. Offensive play will increase chances

of scoring goals, but will allow more goals to be conceded while defensive play will increase the chances of winning especially that you would always need one extra goal than your opponent to win a certain game.

Trninić, Dizdar and Lukšić (2002) concluded their study by stating that winning clubs in European club championship between 1992-2000 are generally characterized as defensive since defense decreases the chances of rivalry team to play efficiently by reducing their ball possession, and goal shooting rates (Trninić et al., 2002).Rodriguez-Ruiz, Quiroga, Miralles, Sarmiento, de Saá and García-Manso (2011, p. 1) indicated that when sport games become more aggressive between competing teams, defensive playing strategy "become decisive for attaining victory in top-level competition". The premise of football champions within national European leagues is being built on good defense. Defense is the primary reason for winning championships even if attacking play is considered the favorite by fans (Elena, 2013). In European football practice and statistics, is quite noticeable that championship winners mostly enjoy the lowest goals allowed results at the end of the season (Whoscored and Transfermarkt). This is also congruent with some forecasting sport literature study made by Yiannakis et al. (2006, p. 101) demonstrating that an EPL team "is more likely to win the current game if in its previous games it had fewer goals scored against the team. Therefore, arriving at the current game with a high number of goals scored against, even if the previous game was a win, may have an overall unsettling effect on the team, possibly undermining its confidence in the goal keeper and in the team's defense capabilities".

Furthermore, such informational resources will allow researcher to know which playing positions managers are focusing on, which is related to managers' playing style. Players' playing minutes are associated with athletic stamina and endurance; thus, it will be the "measure" of it especially when we consider that football players can not stay idle on the football pitch without any certain activity or task to perform

73

with a limited exception of goal keepers who tend to run or walk less than all other players in the squad.

To highlight and clarify some possible overlapping between sport human resources and informational resources, I will discuss pass type and tackling variables. The ball passing "type", whether short, long, or medium length should be considered as informational resource. Why? R-A theory indicated that informational resources should add "knowledge" about a certain competitor or stakeholder in a given industry. Therefore, when a team manager studies the passing type for his team and others, he will surely increase his level of knowledge, and consequently might alter his decisions accordingly.

For example, Barcelona FC plays a short passing style with higher ball positioning called "Tiki Taka", and other teams have struggled to break such tactics. Therefore, this passing type led Barcelona FC to have a competitive advantage over other teams by winning two champions leagues and national leagues. Recently, managers of other teams realized that such playing type would only be stopped with higher levels of aggressive playing skill, thus, tackles and defensive play were used. These two represented human and informational resources respectively, and one can notice an overlapping possibility between them. When I consider defensive play, one operationalization variable to measure it is average of tackles per game during a season since it gives managers knowledge about competitions' defensive playing style. On the other hand, all players can tackle, but only few specific players excel in achieving "successful" tackles and stop talented forwards on competing team's roster without high level of red or yellow cards. Hence, number of "successful tackles" during a season is a human resource "skill" that would benefit teams for better on-field performance.

3.2.3   Sport Relational Resources Category

Relationship resources within sport context can be viewed in two levels. First, the relationship within the team explained by connection between sport team manager and his/her players' squad. This can be explained by the number of minutes played by the team members out of the squad used for a season. For example, if a team manager was focusing on some certain 11 players' group on the pitch for 28 out of 36 games, then these 11 players played almost 78% of total games or (minutes). This "relationship" is considered a relationship resource that will increase cohesiveness and connection among resources within given team. Managers pick the players that match his preferred playing style during a season Wolfe et al. (2005); Wright et al. (1995). Sport team managers choose the squad registered at the national league, therefore, testing the frequency of same starting 11 players will give us an indication about the *level of relationship* between a manager and his squad as well as consistency in relation to on-field performance.

When a manager is frequently changing his starting lineup, it means he does not follow a specific playing tactic or style. Some managers make decisional assessments on which football competition is the prime target for this season especially when we consider the various competitions European teams are involved in. Therefore, the researcher suspects that the higher frequency of starting 11, the tighter the relationship between managers and starting squad. Moreover, R-A theory considers positive relationships among firms' members as an organizational capital and "support the R-A theory's contention that important firm resources are intangible" (Hunt and Morgan, 2005, p. 174). As a result, relationship resources will likely affect on-field performance in this context.

Secondly, the relationship between the team and fan base is explained by attendance. Providing entertainment for paying *fans or spectators* is the implicit goal

among all entities that market the sport product. Home attendance within European football either in domestic or UEFA matches consists of little variability because most matches are sold out. Thus, home attendance will not be chosen as an explanatory variable as it exhibits very little data variability. This was evident when the researcher observed the attendance data from 2009-2014 seasons within the 4 leagues chosen for this research. To overcome that, the "average attendance" between away and home games will be used and thus a higher level of variability was explained in data across teams.

3.2.4 Sport Organizational Resources Category

The historical heritage of AC Milan, Barcelona, or Real Madrid cannot be copied by a new team that was just created or joined the first league recently. This newer team has to go through the "same" historical process as other teams in order to imitate it successfully. Is this possible? No it is not as these teams experienced heterogeneous immobile facts that shaped their existence today and are linked with the teams forever O'Reilly and Nadeau (2006). Hunt and Morgan (2005, p. 188) explained that the complexity of organizational resources as "less vulnerable to substitution and imitation than human resources". Thus, wins of the following competitions;

- Domestic cup and leagues

- Champions League, Super Cup, and Europa Leagues

- FIFA Club World Cup

will likely strengthen this historical on-field performance heritage of European clubs. This historical on-field performance explained by championships won either at the domestic, national or international levels are considered part of the organizational resources especially since that these trophies and their historical effects are embedded

76

within the teams' culture whether they play domestically or at the European level. Therefore, including the historical performance data of clubs at UEFA competitions, for example, is viable even though the focus of the study is on teams competing for national leagues titles often because competitions are overlapping during a given season.

3.2.5 Sport Financial Resources Category

This category of resources was classified in sport literature into three major domains which are players' salaries, transfer price, and market value of players. The first two fields were explained heavily in relation to on-field performance Tomkins et al. (2010); Kuper and Szymanski (2014). Team and players market evaluation is a major trend in sport research (SportBusinessGroup and Jones, 2013; Smith, 2014) that encompasses how talented and skillful players are by the increase in valuation due to extraordinary playing improvement or players deficiencies by decrease in valuation due to injury, for example. Transfer expenditure was included under the financial resource category as transfer expenditure of one club (buyer) is normally a resource for other (seller) and including this in here will give us an indication of managerial decisions variability about cost controls from a season to another to know "Which managers have excelled ... and who blew their budgets on bad buys?" (Tomkins et al., 2010).

4   Research Methodology

Scholars of resource theories have encouraged the examination of potential importance between the combined firms' resources and performance instead of looking at the relationship between strategy and performance only (Barney, 2014). Thus, based on the R-A platform within sport field as visualized in Figure 3 "Antecedent Groupings for On-Field Performance", an objective of this thesis is to potentially build the best predictive models for on-field performance that first compresses original independent indicators into certain latent unobservable factors and secondly highlight which resource categories play major roles in explaining on-field performance. As a result, sport managers would make better-informed decisions regarding prioritization and allocation of sport resources in order to improve on-field performance. Some examples of these sport resources are investments in players' salaries Kuper and Szymanski (2014), relationship with players (Wolfe et al., 2005; Wright et al., 1995) and fans (Adamson et al., 2006), skills and experience of squad and managers Lechner and Gudmundsson (2012), and playing formation and technique during sport games (Wolfe et al., 2005). In summary, the thesis methodology will consist of two complementary statistical methods:

O'Reilly and Nadeau (2006, p. 311) encouraged future research to consider "a myriad of factors" when studying performance of sport clubs. More specifically, they stressed the benefits to knowledge if such a myriad of factors were studied within the "international major sport leagues" (O'Reilly and Nadeau, 2006, p. 327) such as Italian Seria A, Spanish La Liga, English Premier League, and German Bundesliga. Therefore, part 1 will compress the explanatory independent indicators in the specified resource categories into several factors using exploratory factor analysis. The compression can be done in many ways: jointly for all the categories and separately for some of the categories.

Figure 3: Postulated Latent Resources and its Impact on Performance
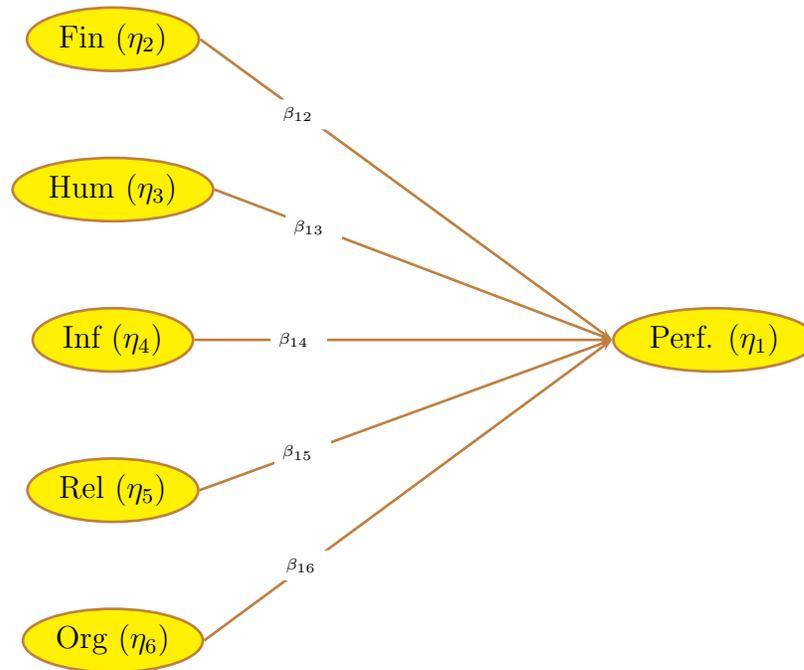
Fin	Financial
Hum	Human
Inf	Informational
Rel	Relational
Org	Organizational
Perf	Performance

Structural Equation Modeling (SEM) will be used to determine role latent resources identified in above to construct their relationship to on-field performance. As a result, the model(s) will rank of resources according to their effects on the latent factor of on-field performance and highlight the amount of such influence for betterment of sport managers and teams alike. Above analysis steps will be explained in detail in this chapter. The following will highlight the data sources, relevance of indicators and factors and test procedures.

4.1   Description of Data Sources

The data used in this research come from four major sources.

1. `www.whoscored.com/Statistics` Provides football statistics, as well as detailed football previews and football rankings from competitions all over the world. The website is a source of live, in-depth football statistics from the English Premier League, Spanish La Liga, Italian Seria A, German Bundesliga, and French Ligue 1 and many other leagues across the globe. Moreover, it supplies unique and original insights for football fans, sports betting punters, journalists, researchers, football managers and players. The website also has football tables, live scores, top performing players as calculated with unique WhoScored.com ratings, articles, graphics, rankings and much more.

2. `www.transfermarkt.co.uk` A German-based online football website that has extensive data about scores, results, on-field performance, and fixtures of teams across different continents with scores, results, transfer news, fixtures, player and club values. Also, it has transfer Balance sheet by clubs per season (transfer expense vs. transfer revenue), and detailed information on how many players were used by manager per season, years' tenure, or throughout their career experience. It is considered one of the largest sport football websites and in the

top 25 most visited German websites according to (Information Community for the Assessment of the Circulation of Media: IVW) in Germany.

3. `www.worldfootball.net` It is a statistical football site that is co-partnering with other sites such as Sportingintellegence. Worldfootball.net provides detailed data and statistical information for all major leagues across all six continents. This information includes team squads, players' age, height, position, scoring and assists, stadium capacity and age, attendance 'average and total' for home and away games. The only statistics used from this site in this thesis was the total average attendance for five seasons between (2009-2013) for all 78 teams participating in the four major European leagues. The average attendance was chosen to provide enough variation for this specific data point especially since the data for the home games are almost always sold out.

4. `www.sportingintelligence.com` The database here allows a researcher to compare first-team average pay at major clubs in major sports around the world on a like for like basis, and see how pay and performance are related in different sporting arenas. For European football, Sporting intelligence covers a variety of football leagues including, but not limited to, English Premier League, German Bundesliga, Spanish La Liga, Italian Serie A, and French League 1. The database produces findings that tell you where each team ranks as players within their own league in that season, and ranks the findings in order of overall value. The Sporting intelligence data allows researchers to test the relationship between money earned and success or failure on field, or not. Sporting intelligence provides a unique collection of database about the average annual salary and the average weekly pay for a "first-team player" in a given season at each club / team.

Note that database focuses on player earnings for participating in sport. It does not include sponsorship or product endorsement that are away from the playing field. But it does seek to provide an accurate guide to average pay for playing their sport. This is not the same as taking a club's headline wage bill and diving by X, Y or Z. Our data is produced by knowing which pots of cash pay the wages of the players we focus on. Therefore, the figures of wages per week mirror the earning for the efforts produced by players on on-field. The databases also provides wages for other employees within the team such as coaching staff, administrative staff, training staff, and ground staff as well as social security and pension plan costs. This thesis only focuses on the wages data for players only which reflect the salary per week earned for "playing on-field" as the data source claims.

4.2   Centrality and Relevance of Indicators/Factors

For this thesis, measurement on multiple original resource indicators was used to form one or more endogenous constructs (Factors). For estimation and statistical inference purpose, all indicators must distributed according to multivariate normal. As it was discussed in section 3.2, legal and physical resources were eliminated from the resource category selection. The methodology is based on the R-A theory framework which already excluded these two categories from the strategic categories of resources. Moreover, the legal resources are not central here since sport literature did not emphasize the effect on on-field performance. Perhaps the unified football regulations across Europe through the UEFA are a reason for such limited effect. Furthermore, the accessibility of legal information such as patents, contracts, agreements are highly confidential, thus, thesis could not include them as indicators. The physical resources such as stadiums, and seating capacity are fixed with minimal variations. For these combined reasons, legal and physical resources were not central to this thesis.

In order to improve the decision on whether a resource indicator is important to the thesis or not and remove selection biases, the research performed interviews with two football (soccer) coaches at University of Guelph campus. For the financial resources, the coaches who were interviewed indicated that the total players' expenditure for sport clubs gives an indication on whether team are developing their own home-grown players. Thus, it is a central indicator for this resource category to explain the level of players' development program within a team. For example, Arsenal FC in England had one of the lowest expenditure figures which explain their higher reliance on home-grown players. Annual salaries and market value for each group of players are highlighted in sport management and marketing literature as central indicators for teams' financial resources well-being. Moreover, it was highlight during coaches' interviews that if teams pay higher salaries for players without winning championships, then it is true indicator of resource management failure that needs urgent assessment.

For human resources, when discussing the original indicators' list 'before EFA', one can notice from the results of descriptive statistics that the average manager's tenure point per match, and his overall historical percentage of wins, draws and losses did not have enough variations with very small sample size of 77 compared to 390 for other indicators. Therefore, these indicators were not central to this thesis. From the coaches' interview stand point, football coaches and players are mostly the most influential to on-field performance in sport human resource category. Coaches have the final say about squad and players will execute the coaches' direction to best of their skills.

For informational resources in accordance to the coaches who were interviewed, there are two main criteria to use to differentiate between if a certain indicator belongs to the human resource category or informational one. These are team versus individual statistics. Coaches indicated if a researcher can narrow the data down to

individual players' level, then that specific indicator should belong to human resource category as it explains the skills for that 'individual player'. On the other hand, if the data cannot be narrowed to individual player level, then it should be considered informational resource about the "team" or competition. The data gathered from data sources for this resource category were 'aggregated' for each indicator on an 'overall' level rather than individual level. Thus, it belongs to the informational resource. Coaches explained, for example, that overall team pass completion percentage should be an informational resource. If a team is not achieving a high pass completion rate, then it means that players are defending more. Therefore, coaches will use that informational resource indicator to improve the performance by involving new video technology to pinpoint the individual player who is giving away the ball more. Thus, the correction level happens on the individual level but the indicator here comes from the team level.

For relational resources, the indicators' attention for this category was on two domains. First, the central indicators that explain the relationship between the football team manager and players were the average minutes and average games by starting 11 and percentage of starting 11 from the total squad used. The higher the indicators, the more cohesive the team, which would indicate a stronger connection and stability of a football manager's lineup throughout the season. Secondly, the data describing the relationship between fans and team focused on the 'average' of attendance between home and away games since it adds more variations into the data. The attendance tickets of home games are usually sold out in European football. There is little or no variability there. Thus, taking the average between home and away games will increase the level of data variability.

The final component is organizational resources. The focus here was on the 'historical' trophies and awards. Thus, a comprehensive count of these will basically compile the indicators between national and international trophies alike.

4.3 Test Procedures

For testing procedures, there are two important questions to highlight. When to discard a resource indicator? When to accept a factor (Latent variable)?

4.3.1 Basis for Discarding Indicators

When to discard an indicator? When reporting indicators' loading at the factor matrix output, SPSS option to suppress loading coefficients less than 0.5 in absolute value O'Reilly and Nadeau (2006) will be used even though some research indicated that the minimum value of 0.4 is still valid Stevens (1992). This will improve readability of loading matrix, analysis of results and interpretation, and offset the smaller sample of 5 years. This is common in sport marketing and management research when using factor analysis (O'Reilly and Nadeau, 2006).

4.3.2 Accepting Factors

When to accept a factor (Latent variable)? The primary goal for this section of methodology is to arrive at 1 factor per each resource group. However, sometimes the resources indicators are so diverse that 1 factor cannot explain them adequately. When determining the optimal number of factors to accept, an objective criterion is necessary. The scree plot aids in deciding how many factors to select. It plots the eigenvalues on the vertical axis and the factor numbers on the horizontal axis. What a researcher should look for is an elbow, or what amount to the "scree" at the bottom on of a mountain, which would suggest a transition to from large eigenvalues to small ones.

The following will describe the two methodological parts one after another.

4.4 Exploratory Factor Analysis (EFA)

4.4.1 Data Handling and Factor Extraction

The data set contains 66 original indicators of resources collected from 2009-2013 of 5 seasons across. These indicators will be grouped into five categories of resources indicated in R-A theory framework. These are informational resources, financial resources, human resources, organizational resources and relational resources. The objective here is that the original resource indicators will be compressed or reduced into factors representing these resources in order to overcome multicollinearity (O'Reilly et al., 2008) by using Exploratory Factor Analysis (EFA) and arrive at a simple resource factor underlying structure (Costello and Osborne, 2005). The method for extracting initial factors will be based on a priori of not looking at factors with eigenvalue less than one. Secondly, the decision about number of factors will be based on conceptually meaningful criterion of simple factor structure. Thus, on which factor do original indicators load the most. Moreover, the statistical rule of scree plot will be used to further assess with number of factors to accept for a given resource category. This was explained in testing procedures part.

Principal axis factoring to perform Exploratory Factor Analysis (EFA) will be used to extract factors for 5 separate groups of resources. Moreover, same methodology will be utilized to extract a unified on-field performance factor. The sport marketing and management literature explained that one method to explain on-field performance can be with the combination of points, goal difference, or goals scored. Seventy-eight, 78, European football teams play in four European leagues in England, Italy, Spain and Germany will form the thesis unit of analysis (i.e. club level). Secondly, the latent factors will be fed into models that will highlight the research questions of this thesis. At end of EFA, a resemblance of R-A resource structure is needed in order to make a logical connection between the platform of R-A theory and potentially

identified models.

4.4.2 Suitability of Data for Exploratory Factor Analysis (EFA)

How to determine if data is suited for EFA? There are two matrices can be used to evaluate the suitability of this thesis data for the first step of factor analysis. Kaiser-Meyer-Olkin (KMO) Kaiser (1974) is the first measure of such suitability. It is a ratio of the sum of squared correlations for all variables in the analysis to the squared correlations for all variables plus the sum of squared partial correlations for all variables. The denominator of this ratio increases with a variation that is unique to pairs of variables making the value of KMO less than one. Kaiser (1974) explained that the acceptable KMO values should not be below 0.5 while the higher values of KMO, the more appropriate the data for factor analysis. He further indicated that values approaching 0.9 are excellent indicators of how well suited the data for EFA and subsequent modeling if any. Secondly, Bartlett's test of sphericity evaluates the null hypothesis that the correlation matrix is an identity matrix. This means that all values in the diagonal are 1 and all the off-diagonal values (correlations) are zero, which would indicate no relationships among the indicators. Thus, there would no basis on which to proceed with factor analysis. Examining the significant level results allows rejecting this null hypothesis and thus, accepting the alternative hypothesis that correlation matrix is not an identity matrix.

4.5 Structural Equation Modeling (SEM) For European Football Clubs

In this section of the research methodology, structural equation modeling (SEM) will be used to estimate relationships between the on-field performance characteristics of football teams and various resources of those teams. The relationships are hidden because they are phrased in terms of hidden factors underlying the resource and on-field

performance groups. The interest here is centered on describing "What sport resource factors influence variability in on-field performance construct?" There are 3 on-field performance indicators and 5 groups of resources: informational resources, financial resources, human resources, organizational resources and relational resources. For the base model, structure of the resource factors identified during exploratory factor analysis (EFA) resembling R-A theory resource framework and run few SEM models.

SEM is a generalization of linear regression and confirmatory factor analysis. While in factor analysis, latent constructs are extracted independently for each resource group, SEM focuses on estimating role of latent constructs on on-field performance. Therefore, SEM has the potential for higher predictive power when one group of indicators is used to predict another. In this respect, SEM is similar to partial least squares path modeling (PLSPM). Yet SEM has differences with PLSPM as well. While PLSPM is an algorithmic procedure which has been demonstrated to perform well experimentally, SEM has theoretical justification. SEM is part of maximum likelihood estimation with understanding of distribution of all the relevant indicators and factors.

Is SEM the optimal method for our problem? It is just another method, with its strengths and limitations. It should be used jointly with factor analysis to draw conclusions about the structure underlying the relationships between resources and performance. R-A theory explains the unobservable resources, and SEM is the only statistical method that allows testing for such latent unobservable factors. However, it should be used jointly with factor analysis to draw conclusions about the structure underlying the relationships between resources and performance The strong sides of SEM are the following.

1. The method attempts to find factors, which are strongly correlated with one another.

88

2. The method is general enough to allow for many hidden factors per group, any linear relationships between the factors and any covariance structure of the measurement errors. In other words, SEM allows for general and flexible models.

3. The estimation procedure has theoretical justification, based on the method of maximum likelihood.

4. SEM easily produces standard errors of all the coefficients as a by-product of maximum likelihood estimation.

The limitations of SEM are important as well. Here they are.

1. In its simpler form, the method allows for only linear relationships

    (a) Between the hidden factors,

    (b) Between the hidden factors and the respective measurement variables,

2. If there are a moderate number of observations per each variable, the estimation procedure may get highly unstable, produce inaccurate estimates or even not converge at all.

3. In its simpler form, the method assumes that indicators have multivariate normal distribution. Method is more sensitive to the normality assumption than many competing methods (e.g. factor analysis).

As noted above, SEM does postulate a certain distributional family for the indicators. When assuming that the indicators are jointly normal then the sample covariance matrix has Wishart distribution and allows for a simple maximum likelihood estimation of all the coefficients. Even if the data are not normal, the SEM estimation procedure is equivalent to pseudo-maximum likelihood estimation since the covariance

matrix is a known function of the coefficients. Pseudo-maximum likelihood estimation is known to be consistent, which means that the coefficient estimates converge to the true values when the sample size converges to infinity. The drawback of the departure from normality is that the p-values from various diagnostic tests are underestimated. For any inference they have to be used conservatively. First and foremost, this applies to asymptotic Z-tests that would be used to check statistical significance of particular coefficients in the model. Technically speaking, asymptotic Z-tests are always valid for large samples. But, sadly, large samples are rarely the norm. And for samples of moderate size departure from normality becomes important.

There will be three models used in this thesis . The base model in stated below. It is the beginning of all other modeling variations that were considered.

Suppose there are three indicators of latent measure of on-field performance (P_1, P_2, and P_3). Our exploratory factor analysis suggest that latent variable on-field performance (Perf) is related by factor loadings λ_1, λ_2, and λ_3 and there might be potential measurement error denoted by δ_1, δ_2 and δ_3. Mathematically in matrix notation this can be written as shown in Equation (1) and in picture format as in Figure 3.

$$
\begin{pmatrix} P_1 \\ P_2 \\ P_3 \end{pmatrix} = \begin{pmatrix} \lambda_1 \\ \lambda_2 \\ \lambda_3 \end{pmatrix} \text{Perf} + \begin{pmatrix} \delta_1 \\ \delta_2 \\ \delta_3 \end{pmatrix} \tag{1}
$$

Exploratory Factor analysis of resource related indicators may be somewhat more complicated because some of resources there are numerous other indicator available. However, for purpose of illustration, imagine human resource related indicators. Suppose there are seven indicators ($H_1, H_2, \cdots, H_7$) and potentially there might be two latent factors (Hum_1 and Hum_2), then factor model can be represented as follows.

Figure 4: Latent Performance and its Measured variables
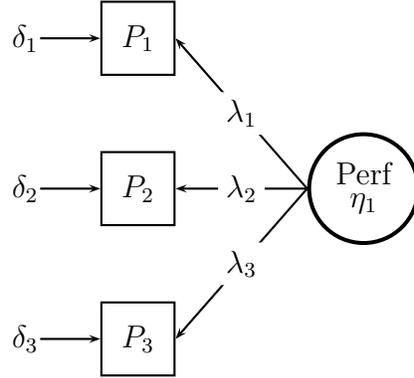
$$\begin{pmatrix} H_1 \\ H_2 \\ H_3 \\ H_4 \\ H_5 \\ H_6 \\ H_7 \end{pmatrix} = \begin{pmatrix} \lambda_{h11} & \lambda_{h21} \\ \lambda_{h12} & \lambda_{h22} \\ \lambda_{h13} & \lambda_{h23} \\ \lambda_{h14} & \lambda_{h24} \\ \lambda_{h15} & \lambda_{h25} \\ \lambda_{h16} & \lambda_{h26} \\ \lambda_{h17} & \lambda_{h27} \end{pmatrix} \begin{pmatrix} \text{Hum}_1 \\ \text{Hum}_2 \end{pmatrix} + \begin{pmatrix} \delta_{h1} \\ \delta_{h2} \\ \delta_{h3} \\ \delta_{h4} \\ \delta_{h5} \\ \delta_{h6} \\ \delta_{h7} \end{pmatrix} \tag{2}$$

Finally five resources categories or their appropriate latent variables, informational (Inf), financial (Fin) , human (Hum), organizational (Org) and relational (Rel) could be linked to on-field performance (Perf) using following structural equation.

$$\text{Perf} = \beta_I \text{Inf} + \beta_F \text{Fin} + \beta_H \text{Hum} + \beta_O \text{Org} + \beta_R \text{Rel} + \epsilon \tag{3}$$

where ϵ is error associated with structural equation.

Note that **Equation (3) is of central interest** in order to arrive at the overarching research question of resource structure within sport teams in European football.

To arrive at appropriate structure of resources, sequence of steps as follows:

1. All indicators for both on-field performance and resources were normalized such that mean is zero and standard deviation of 1.

2. For each resource group indicators, equation (2) was estimated with one factor. This step was repeated.

3. For each resource group, estimate a model with only the factors for that group. The number of factors is suggested by factor analysis. To ensure the numerical stability of estimation, the following procedure was used:

   (a) Get the initial measurement model from the factor analysis stage.

   (b) If the model does not allow for convergence of the maximum likelihood estimation routine, set those coefficients to 0 whose absolute values fall below 0.1.

   (c) If the resulting model does not allow for convergence of the maximum likelihood estimation routine, set those coefficients to 0 whose absolute values fall below 0.15.

   (d) If the resulting model does not allow for convergence of the maximum likelihood estimation routine, set those coefficients to 0 whose absolute values fall below 0.2.

   (e) Finally, if the resulting model does not allow for convergence of the maximum likelihood estimation routine, set those coefficients to 0 whose absolute values fall below 0.25.

4. Attempt estimating two versions of the base model: with one financial factor and two financial factors. When noticing that the estimation procedure is numerically unstable due to a very small sample size. Drop a few factors which were identified as non-significant at stage 2]. After that, both versions of the base model are estimated accurately. The estimated models do not contain any interactions of the hidden factors. As such, they are "main effects" models

5. Refine the main effects models further using the process of backward stepwise selection. This way the resulting models contain only statistically significant factors. The improvements will be confirmed by the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC), which have substantially lower / better scores. This way the resulting models will contain only statistically significant factors without too much compromise of the main goal of one factor per resource group or slightly close to that.

6. Improve, if possible, the models using backward stepwise selection.

4.6   Why EFA and SEM?

Usually, researchers during collection and analysis of data have a priori idea about how variables or constructs in a large data set are related to each other (Floyd and Widaman, 1995). Therefore, EFA is used to uncover the structure of such data set in order to identify latent constructs (i.e. Factors) underlying measured variables and cause them to covary (Costello and Osborne, 2005). It is worth noting here that Principle Component Analysis (PCA) is only a data reduction method and elimination of multicollinearity without ability to uncover the structure of certain variables. Costello and Osborne (2005) which was cited more than 4470 times explained the difference between the two methods. They suggest that EFA is preferable to PCA especially when researchers want to fulfill the interest to study the relationships among the variables while PCA is more used when there is more emphasis on data reduction and less on interpretation purposes.

One of the major objectives of this study is building the optimal predictive model for on-field performance. There is a large amount of indicators for on-field performance in both literature and practice. Therefore, exploratory factor analysis will be used to compress the original 66 indicators and the three on-field performance indica-

tors of total points, goal difference, and goals scored to build such a model for on-field performance in national European championships using the created factors instead of having only a small model with only few predictors. This is useful for representing dynamic systems such as on-field performance. Please note that the exploratory factor analysis will be done to reduce the number of indicators and create latent factors and eliminate multicollinearity.

Secondly, the SEM will be used to create the potential models to answer the research questions at hand. There are three statistical methodological options to tap into. These are linear regression, Partial-Least Square (PLS) or Structural Equation Modeling (SEM). After performing EFA, the only option that can be used to tap into the 'nature' of this thesis is SEM. Why SEM in specific? The resources that influence on-field performance, based on R-A framework, are 'unobservable', intangible or latent in nature. SEM allows testing the effect of these latent factors on on-field performance. Again, R-A theory explains that these resources are latent (unobservable) and are affecting performance. Barney (2014) explained in his latest assessment of resources in relation to firms' performance that building different empirical models to examine the effects of combination of firms' resource on performance is fruitful.

When several factors are extracted, the unrotated (orthogonal-not correlated factors) solution and the solution obtained through the direct oblique (correlated factors) rotation will be both reported. The unrotated set factors keeps the options open. Later on, if it was optimal to use a single most representative factor for the resource group, that factor will be the first component in the "unrotated" solution. On the other hand, the oblique set of factors has the potential for better interpretation. Please note that the exact factors will be never be firmly known because they are latent and unobservable in nature matching the R-A theory framework. Therefore, what can be done is to calculate their estimates using the factor score coefficients.

Indicators of total points, goal difference, and goals scored in national championships of EPL, Seria A, La Liga, and Bundesliga will explain or operationalize the on-field performance. The optimality of the model is understood in the sense of the smallest mean-square error of a prediction on a new data set. The predictive model can potentially rely on all categories of explanatory indicators discussed in the R-A theory perspective of sport management, and those include several previously non-utilized resources. It is worth noting that that the chosen objective conflicts with the goal of studying the influence of each explanatory original indicator on total points, goal difference, and goals scored in national championship in its original form separately.

Moreover, to assess interactions, one might experiment with adding few interactions of the statistically significant factors into a linear model. EFA by category would be one of the steps that could be performed under this step. Running factor analysis on all of the explanatory variables jointly and seeing if it implies any clear separation into major categories will accomplish it. KMO results of these categories will determine if data within such categories are suitable for factor analysis.

5   Research Findings

In this part of analysis, the scree plots suggested one factor for each of the financial resource, organizational resource and relational resource groups. These are 3 out of 5 resource groups are represented with one factor each, which is optimal. However, for the informational resources and human resources, the scree plot suggests 3 and 2 factors respectively. For all resource groups except for relational resources, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is between 0.738 and 0.827. This indicates that the resource groups are very suitable material for factor analysis. For relational resources, the KMO measure of sampling adequacy equals to 0.53. While this is close to the borderline indicated by Kaiser (1974), it is still above 0.5 threshold. Therefore, it was surely within the acceptable limits. Moreover, for all resource groups, the p-value (significant level) of Bartlett's test falls below 0.001. This definitively confirms that the correlation matrix of each resource group is not the identity matrix. Thus, this is another important confirmation that the data for this thesis is well suited for EFA. For all factors, smaller loadings of original indicators than 0.5, thus, they were not reported. This means such indicators could be eliminated from their relevant resource group and uses other remaining indicators with higher than 0.5 loading to drive the interpretations of factors' labeling and over all factor reliability. The visualization of models' results can be found in Figure 3 and 4.

The findings of factors for on-field performance and each resource category are as follows:

5.1   Performance Factor Extraction Finding

Principal axis factoring has been used to extract factors from the three on-field performance indicators: Points, Goal Difference, and Goals Scored. The scree plot in

Figure 5 was used to choose the optimal number of factors, which is 1 factor. The main factor explains 92.3% of variation in the standardized versions of the performance indicators. This is remarkably high explanatory power. Since on-field performance indicators are being represented only by one factor, there is nothing to rotate. Please note that we will never know the exact factor because it is latent. Therefore, to calculate its estimate, the factor score coefficients will be used. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is above 0.75. This indicates that team performance is suitable material for factor analysis. The p-value of Bartlett's test falls below 0.001. This definitively confirms that the correlation matrix of the performance indicators is not the identity matrix. For a reference on all of these results and estimation of performance factor see Appendix A.

5.2 Informational Resources EFA Finding

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is 0.755. This indicates that informational resources category is suitable material for factor analysis. The p-value of Bartlett's test falls below 0.001. This definitively confirms that the correlation matrix of the informational resource indicators is not the identity matrix. According to the scree plot in Figure 6, 3 factors are optimal. The 3 factors, rotated or not, explain 41.027%of variation in the original 25 indicators. Seems like a decent data reduction. The rotation method used was direct oblimin. For a reference on all of these results and estimation of rotated informational resource factors, see Appendix B.

Informational Resource Factor 1: Offense

To determine the theme of a factor, the indicators with "highest" loadings will be used and study the common relationship or theme between them in order to indicate what this factor should be labeled. For factor 1, the indicators with highest loadings are Goals From Open Play (0.871), Short Passes (0.778), Ball Possession Per Game

97

(0.850), Total Shots Per Game (0.815), Shots on Target Per Game (0.892). Upon a consideration of the "common theme" across these indicators, it is well defined, and interpretable to notice that they well represent the football team offense. Offensive ability is usually related to the on-field performance of a team during the pursuit to score a goal at opponent. Thus, this offensive process will surely include, but not limited to, an open playing style where teams majorly use short ball passes between team members trying to achieve higher ball possession. The ability to hold the ball successfully in both sides of the field will increase the chances to have higher total shots against opponent both on and off targets. During this process midfielders and forwards will "sometimes" rely on individual skills of dribbling which could be important to pass the opponent on one-to-one challenges. Football is a "team sport", thus, we see open play, ball possession, and short passes score high under Factor 1 (Offense). A concrete example of such playing style is FC Barcelona. This team is characterized with a "Tiki Taka" short passes with higher ball possession which creates a higher than normal open play percentages during game statistics. With this playing style, FC Barcelona managed to win two Champions Leagues, four domestic leagues, two league cups, and four super cups in the last 5 years.

Informational Resource Factor 2: Defense

On the other hand, upon a consideration of the "common theme" across indicators grouped under factor 2, one would notice that the theme of this factor would be better described as "defensive play" of a given football team. Defensive ability is usually related to the on-field performance of teams trying to "stop" or interrupt the opponent to score a goal against them. Thus, it is normal to see indicators such as Cards From Fouls (0.633), Other Type Cards (0.609), Fouls made by team Per Game (0.542) and Fouled by opponent Per Game (0.525). One interesting and realistic interpretation here that the only negative loadings under factor 1 (Offensive Play) is "Shots Conceded Per Game (-0.621)" that is clearly related to factor 2 (Defense).

Hence, it is normal to have an opposite sign for this indicator to the offensive play theme of factor 1.

Informational Resource Factor 3: Combination Offense and Defense

For this factor, there is a clear indication of a mix-play weighted play between offense and defense. There are three indicators with higher than 0.5 loading under this factor described as Fouls Per Game (0.528), Dribbling Per Game (0.574) and Fouled Per Game (0.533). All of these indicators have almost equal loading under this factor around 0.52 leading to an almost equal weight of 33% for each indicator contributing to this factor. Furthermore, the offense here contributes to almost 66% of this factor with 2 indicators while defense accumulates to almost 33% represented by 1 indicator. This is a ratio of 2/3 to 1/3 in favor of offense. In order to understand factor 3, lets look at the question of "What should a team do to win games?". The answer to this question is as simple as "to win a game, teams must score one more goal than they concede".

Is this the case for winning teams across the big leagues in Europe? When studying the top 4 teams in each league, especially the champion of each league between 2009-2013, It was noticed that almost all winners and other higher ranked teams (2nd -4th place) were located a lot higher than average offensively (further to the right side in Factor 1 Offensive) and right equal or slightly above average (toward the middle of Factor 2 Defensive). Examples of these winning teams are Chelsea, Manchester United, Manchester City, Arsenal in England, Barcelona, and Real Madrid in Spain, Juventus, AC Milan in Italy, and Bayern Munich, Borussia Dortmund in Germany. Thus, there is a clear indication that football managers of winning teams are putting higher efforts into producing more offensive play than defensive. This supports the initial interpretation that factor 3 should be labeled as "Weighted" between offensive and defensive respectively.

Other interpretation here is that the majority of Italian clubs are located on the coordinate that represents high defense and lower offense (quadrant 2). This goes in line with the nature of Italian Serie A league that is normally characterized with high intensity of defense explained by low goal scoring difference between opponents. Moreover, German teams present the majority in quadrant 3 characterized with lower offense and defense. One team, Bayern Munich, with some competition from Borussia Dortmund, normally dominates German Bundesliga. Over the years, management of German Football put more emphasis on the German national team rather than the local league. Thus, observers and German football followers tend to see that one team dominate the purchase of talented players from all other German teams during the transfer windows (e.g. Bayern Munich). This strategy is to strengthen the national team with cohesive set of players who majorly belong to the "same" team in Bundesliga. Therefore, the competition level of German national team stays strong. For example, in 2014 World Cup, Germany played with up to 7 Bayern Munich players including the final. Germany is the current World Cup champion.

The same strategy happened with 2010 World Cup winners Spain who played 7 players from Barcelona that dominated the world league football during that period. Bayern Munich and Borussia Dortmund who shared winning the Bundesliga in the last 5 seasons are located in quadrant 4 characterized with higher offensive play and lower than average defensively, yet, better than majority of other European football teams. English teams are majorly located in Quadrant 4, which also indicate the same characteristics. Spanish teams are roughly scattered across quadrant 1 and 2 with Real Madrid and Barcelona majorly located in quadrant 1 (high defense and offense).

In general, as we indicated before, all national league winners across England, Spain, Italy, and Germany experience high offense (factor 1), and their slightly above or lower than average defense (factor 2) depending on the nature of games in that

league. Finally, the factor plots in rotated factor space between defense and offense factors of informational resources category found in Figure 12 shows a clear separation of original indicators across these two factors.

5.3 Financial Resources EFA Finding

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is 0.827. This indicates that team financial resources category is very well suitable for factor analysis (Kaiser, 1974). The p-value of Bartlett's test falls below 0.001. This definitively confirms that the correlation matrix of the financial resources indicators is not the identity matrix. According to the scree plot, 1 factor is optimal. So there is nothing to rotate. The factor explains 56.696% of variation in the original 11 indicators. For a reference on all of these results and estimation of financial resource factor, see Appendix C

Factor: Financial Resources

The results of European football teams distribution across the financial resource factor from 2009-2012 can be found in Figures 14-19. The following is a description and analysis of these results. Fortunately, the scree plot in Figure 13 suggested one factor accounted for almost 60% of variance in this resource category. This meets the initial optimal goal of arriving at one factor per category of resources. Therefore, it is simpler to name the theme of this factor as "financial resources". After careful consideration of the highest indicators loadings under this factor, one can notice that the standardized indicators of Average Annual Salary Per Player, Total Market Value for Goalies, Total Market Value for Defense, Total Market Value for Midfielders, and Total Market Value for Forwards have very high loadings above 0.827 which indicate higher relationship with the financial resource factor. The indicators of Total Players' Purchased Expenditure, which represents transfer price, had a 0.676 loading on the financial resource factor.

Sport marketing and management research explains that annual salaries (Kuper and Szymanski, 2014) and players' transfer prices (Tomkins et al., 2010) are the two primary indicators leading to higher on-field performance. The financial resource factor confirms the importance of both antecedent to on-field performance from sport marketing and management literature and further indicate that annual salaries is more associated with financial resource factor (0.926) than players' expenditure (transfer price) (0.676). Moreover, financial resource factor adds in a third measure, which is the "market value" of team players such as goalies, defense, midfielders and forwards.

It is well noticed that the majority football teams across England, Spain, Italy and Germany are performing below average financially. The further teams move to the right side of the financial resource factor continuum, the richer and more financially stable they are. Teams such as Barcelona, Real Madrid, Manchester United, AC Milan, Juventus, Bayern Munich, Arsenal, Chelsea, Liverpool, and Inter are front-runners in terms of financial resources factor showing strong financial books, and higher players market values. Manchester city has dramatically crashed into this list in the last 3 years since the purchase of Abu Dhabi United Group, which allowed Manchester City football club to become one of the richest teams in the world.

Clubs such as Borussia Dortmund which is on the lower financial resource factor managed to win the German Bundesliga twice in the last 5 years compared to Bayern Munich German football club which managed to be considered strong financially, but that came with a hefty financial price which is almost double the size of Borussia's. Some cross analysis with relational resources, and/or human resources would be ideal to further understand how teams with lower budgets such as Borussia Dortmund managed to lift the golden trophy. This further indicates unique financial and relational management systems of Borussia Dortmund during the years they managed to win the Bundesliga title. There were five indicators contributed less than 0.5 loading suppressing to financial resource factor and were eliminated from the reduced set.

These were total players' purchased expenditure, total players' sales gain, average market value for goalies, average market value for defense and average market value for midfielders.

The indicators representing "average" value were not favorable in this factor because usually average indicators do not reveal as much information as total ones. Therefore, all of these indicators were removed from results found in factor score coefficient matrix at Appendix C and pie chart found in Figure 19 to improve redundancy under the financial resource factor. These indicators were average market value of goalies, defense, midfielders, and forwards. These indicators showed lower association with the factor with exception to one indicator (average value for forwards). Regardless of its high association with factor, this indicator was still removed since the association of forward market value was already captured with the "total" indicator. One of these removed indicators (average market value for goalies) has lower value than 0.5 and other two (average market value for defense and midfielders) had "low" 0.5 value, which represented a lower association with factor to begin with. Again, this step was done to limit the redundancy level and eliminates overlapping data.

More than 45% of the financial resource factor is being represented with just two indicators. These two indicators are Total Market Value for Forwards (0.243) and Total Market Value for Midfielders (0.21) respectively. This is fairly consistent with informational resources analysis where thesis stated that winning teams usually focus more on offensive playing. Thus, market values for forward and midfielders are normally acquire the majority of the offensive financial measure of a given team. From looking at the factor score coefficient matrix in general, the market values for both forwards and midfielders are almost double compared to the market value of goalies and defenders. This is another indication mentioned in informational resource factor 3 (Combination between defense and offense) to confirm the 66.66% versus 33.33%

103

weights of play between offensive and defensive which are double in size between the two.

5.4 Human Resources Factor Analysis

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is 0.73. This indicates that human resources category is suitable material for factor analysis. The p-value of Bartlett's test falls below 0.001. This definitively confirms that the correlation matrix of the human resource indicators is not the identity matrix. According to the scree plot in Figure 20, 2 factors are optimal for this resource group. The 2 factors, rotated or not, explain 40.511% of variation in the original 15 indicators. For a reference on all of these results and estimation of rotated human resource factors, see Appendix D. The results of European football teams distribution across the human resource factors from 2009-2013 can be found in Figures 22-27. The following is a description and analysis of these results.

Human Resources Factor 1: Managerial Tenure

To determine a factor theme, the common relationship among the indicators with "highest" loadings was studied in order to label that factor. After consideration of the "common theme" between these indicators, it is noticeable that they well represent the "Managerial Tenure" of a given football team manager. For factor 1, the theme is well defined and interpretable. The indicators with highest loadings are Managers Tenure years (0.973), Managers Tenure Wins (0.956), Managers Tenure Draws (0.981), and Managers Tenure Losses (0.865). Surprisingly, the managerial career experience (0.407) did not make the .50 absolute value used as a limit for factor loading. Hence, managerial tenure has double loading size than managerial experience.

This highlights the importance of managerial tenure success over career experience "prior to" joining the club. This is somewhat adding another perspective to analysis since most sport marketing and management research indicated the effect of

both managerial tenure (Lechner and Gudmundsson, 2012) and experience (Smart and Wolfe, 2003) as drivers to improve on-field performance. Obviously, the tenure performance is explained by the percentage of managers' tenure wins, draws, and losses (Bashuk and Intelligence, 2012). The recent emergence in European football management practice is hiring younger coaches who have less total managerial experience, but at end of season proved to have strong results with current team (i.e. tenure). For example, Pep Guardiola who coached Barcelona for 4 years between 2008 and 2012 managed to win 14 domestic and European titles without much of managerial experience prior to that. Other examples include Jose Mourinho, and Jorgen Klopp to name a few.

Human Resources Factor 2: Squad

Another group that contribute to the human resources within a sport team is players. Therefore, it was logical to see that factor 2 is majorly compounded with number of different player groups. The common theme between these four indicators is the size of the playing squad for each group of players, which are goalies (0.673), defensemen (0.749), midfielders (0.523) and forwards (0.701). Number of Defense and Forwards came with the highest loadings. This goes on the same analogy of offense and defense under factor 1 and 2 in informational resource category which were discussed earlier. Therefore, it is noticeable that European football teams are focused on giving more weight to first strengthening defense and forwards by signing or nurturing good players for these positions then improve goalies, and midfielders afterwards.

It was noted that Manchester United and Arsenal are front-runners when considering the combination between the two human resource factors of managerial resources and player's squad between 2009-2010 and 2012-2013 seasons. The reason for that is the long coaching experience and tenure of the retired coach of Manchester United Sir. Alex Ferguson who coached the team for 27 years while Arsene Wenger coaching

Arsenal for 20 years and still continue to do so. The analysis of the relational resource factor here is important. Managers will normally use a fixed number of squad in order to sustain consistency and cohesion between the starting 11 players. One important analysis to mention is about the teams that fall into the relegation zone of the league. A lot of these teams are coming below average of managerial resources and/or slightly above average of players squad. If teams are filling up the squad roaster with players, but yet perform poorly then that means they are having low managerial resources, minimum number of talented players or both. On the contrary, some successful teams in the last 3 years such as Manchester City managed to win the English Premier League with slightly above average managerial resources. Why is the case? Staffing the team with highly capable and talented squad will allow managers to perform better and possibly win the league despite their tenure and experience. There is a clear distinction between the indicators loading on either factor 1 (Managerial Tenure) or factor 2 (Players Squad) found at the scatter-plot in Figure 27.

5.5 Organizational Resource Factor Analysis Findings

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is 0.82. This indicates that the team organizational resources category is very well suitable for factor analysis (Kaiser, 1974). The p-value of Bartlett's test falls below 0.001. This confirms that the correlation matrix of the organizational resources indicators is not the identity matrix. According to the scree plot, 1 factor is optimal. So there is nothing to rotate. The factor explains 51.489% of variation in the original 8 indicators. For a reference on all of these results and estimation of organizational resource factor, see Appendix E.

Factor: Organizational Resources

The results of European football teams distribution across the organizational resource factor from 2009-2013 seasons can be found in Figures 29-35. The following is a description and analysis of these results.

The scree plot in Figure 28 suggested one factor accounted for almost 51.50% of variance in this resource category. Therefore, it is logical to label the theme of this factor as "Organizational Resources". When considering the loadings of indicators under this organizational resource factor, one can notice in Figure 35 that the historical performance of domestic championships (leagues, cups or super cup) has in general higher loadings than the historical performance of European championships.

This is not surprising as it is normal to note that teams who usually win the elite European Champions League (CL) at a given season, for example, are found to be dominating their 'domestic' league at the previous season. It is rarely to see a European team wins the prestigious CL and has a poor performance domestically. The organizational resource factor tells us about the embedded winning history of a team in terms both domestically and nationally. Furthermore, the club age was not a significant indicator under this resource category. Therefore, this indicator was not part of analysis. Figures 29-34 can visualize how European teams relate to this factor between 2009-2013 seasons.

It is normal to see that the majority of teams in Europe are below the average in relation to the organizational resource factor. This is because that teams winning their relevant leagues between 2009-2013 seasons are just a few (i.e. one team per championship). Figures 29-34 present a breakdown to team-by-team relationship with the organizational factor between 2009-2013 seasons. European teams with long history of winning championships such as Barcelona, Real Madrid, Athletic Bilbao, Manchester United, AC Milan, Juventus, Bayern Munich, Arsenal, Chelsea, Liverpool are scoring high on the organizational resource factor. Therefore, again, the majority

of other European teams are below average in relation to the organizational resource factor because they only play in domestic leagues without winning it.

5.6 Relational Resources Factor Analysis Findings

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is 0.53. This indicates that relational resources category is suitable material for factor analysis. The p-value of Bartlett's test falls below 0.001. This definitively confirms that the correlation matrix of the relational resource indicators is not the identity matrix. According to the scree plot in Figure 36, one factor is optimal and explains 36.962% of variation in the original 5 indicators. For a reference on all of these results and estimation of financial resource factor, see Appendix F.

Factor: Relational Resources

Indicators (Average Minutes Played by Starting 11) and (Percentage of minutes Played by Starting11) have the highest loadings of .859 and .990 respectively. These two indicators are consistent with sport management literature which explain the level of relationship developed between managers and players. Football managers have higher tendency to use somewhat similar starting 11 players for league matches in order to increase level of football play cohesiveness during matches. This might be important when studying the effect on on-field performance in the next step of analysis.

In summary, there was one factor for each of financial, organizational and relational resource groups. This is aligned with the initial intention of single factor for each group of resources. For the human resource category, the results are not far off either with 2 factors representing 15 indicators. For the informational resource category, one can run the subsequent models in the next step of methodology by using all three factors identified by scree plot in the EFA, 2 factors and with one factor and test which one gives the optimal model. The factors identified here in this

part 1 of methodology will be used as "predictors" for on-field performance construct. The KMO and Bartlett's tests indicated that our initial large set of data were suited for EFA to begin with. The methodology started with 66 indicators representing 5 resource categories, and arrived at 8 factors only, which could be down to lower number of factors depending on results for optimal model identified in subsequent SEM part of methodology. This will be explained in the SEM finding section below. The summary of all extracted factors and original resource categories can be found in Table 6.

5.7   Structural Equation Modeling: Linking Resources to Performance

Table 7: Linking Resources to On-Field Performance

Resources	Model 1	Model 2 (Second-Order)	
	Dependent Variable		
	Performance	Performance	Informational
Informational	-1.901**	-4.532**	
	(0.69)	(1.39)	
Financial	0.795***		-0.251***
	(0.08)		(0.08)
Human	0.072**		-0.048**
	(0.02)		(0.02)
Relational	0.198***		-0.051*
	(0.03)		(0.03)
χ^2	5432.527		10873.969
Degrees of freedom	809		1532
Stat. sign. of χ^2	≤ 0.001		≤ 0.001
RMSEA	0.136		0.140
AIC	28071.489		38779.816
BIC	28422.423		39231.551

Notation used: *p $\leq$ 0.05, **p $\leq$ 0.01, ***p $\leq$ 0.001
Approximate standard errors of parameters in parentheses.

The results in Table 7 are largely comparable over the two models. Quite pre-

dictably, financial, human and relational resources seem to contribute to the most to team on-field performance. The corresponding regression coefficients are positive and highly statistically significant. The magnitude of the coefficients is close over the two models. Model 1 has smaller AIC / BIC information criterion results than model 2. This indicates that model 1 has a better fit than model 2. The RMSEA metrics for model 1 and model 2 are quite comparable. In fact, their 95% confidence intervals overlap. The RMSEA results are considered stistically rather large since the acceptable RMSEA scores should be maximum of 0.06 or less. The negative sign of the informational resources factor in model 1 captures or explains how aggressive the team is represented by the number of red cards, yellow cards and defensive fouls.

To find possible solution for the potential collinearity between informational resources and other resources in models 1, model 2 presented informational resources as an inner-layer or an intermediate performance factor influenced by other resource factors and in turn affecting on-field performance. Results also indicate that financial, human and relational resources are statistically significant predictors of informational resources in this situation, and through informational resources, the impact of financial, human and relational resources on team performance is statistically significant. All the signs of coefficients are as expected. Much resource of any kind is good for the team.

More importantly, both models agree on importance of financial ranked first, relational resources ranked second and human resources ranked third. Manipulating those would be one way of enhancing the team performance. For both models, the goodness-of-fit test rejects the null hypothesis, claiming that the given model is as good as the "saturated" model. The results of both SEM models indicate that the only group that did not show significance and do not predict on-field performance was the organizational resources. This is not surprising as organizational resources for this thesis represent the "historical performances" of football clubs (O'Reilly and

110

Nadeau, 2006). Teams do not change much when it comes to winning trophies during the span of 5 years of data, thus data here has limited variability. For example, from 2009-2013 Chelsea FC won one EPL championship while Arsenal did not win it at all. When recalling the final results of organizational resources EFA output, and its scatter-plot, It was mentioned that:"It is normal to see that the majority of teams in Europe are below zero in relation to the organizational resource factor. This is because that trophy winning teams in each league between 2009-2013 seasons are just few teams [Thus variability is low]". Therefore, SEM output finding here is another confirmation of that. The following will highlight RQ 1 of "Which sport resources have the highest influence on teams on-field performance?" and RQ 2 of "What is the prioritization structure of sport resources affecting on-field performance for sport teams?". Basically there are two suggested models to answer these two research questions. First, the one-order structure represented by model 1 and second-order model represented by model 2 of the results.

5.8   Direct Link of Resource to Performance: Models

The following two conclusions were made:

1. In the marginal sense, each resource group is a statistically significant predictor of the performance. At stage [1] of the estimation procedure, each resource group has the p-value below 0.001.

2. In the main effects model with financial resource factor, informational resource factor (defense) and relational resource factor are statistically significant predictors of on-field performance factor. The factors of offense, squad and organizational resources were not statistically significant according to the associated Z-tests of model 1.

5.9 Second-Order Model: Model 2

To follow up on the estimation results, It was experimented with adding one extra layer (second-order) to the modeling framework. Here, it was assumed that financial resources, human resources, organizational resources and relational resources influence informational resources as an intermediate performance factor, which in their turn influences team on-field performance. There is no direct link between the four non-informational resource groups and team on-field performance. In addition to that, each resource groups were represented with only one factor to resemble the R-A theory framework. First, the full model was used containing all four non-informational resource groups named above. Then, through the process of backward selection, the statistically non-significant factors were dropped.

5.10 Models and Ranking of Resources

Results to answers RQ 1 and RQ 2

RQ 1: Which sport resources have the highest influence on teams on-field performance?

RQ 2: What is the prioritization structure of sport resources affecting on-field performance for sport teams?

1. Model 1 represents the refined main effects model with all the factors are statistically significant by construction. In particular, the estimated structural equation is given by:

$$\text{Perf} = -1.901\text{Inf} + 0.795\text{Fin} + 0.072\text{Hum} + 0.198\text{Rel} + \epsilon_1$$

The relative importance of predictors is measured by standardized regression coefficients (beta). The resource groups (factors) can be ranked in the descending order of influence to on-field performance: Financial (Fin, 0.553), Information

(Inf, -0.355), Relational (Rel 0.175) and Human resources (Hum2 0.081). The model exhibits satisfactory goodness of fit, having the RMSEA of 0.136.

2. Model 2 represents the informational resources as an intermediate performance factor influenced by other resource groups, and informational resources in their turn influence team on-field performance as a result. No direct link between human, relational, financial, and organizational resource factors and on-field performance in this model. The resource groups (factors) can be ranked in the descending order of influence to on-field performance: Financial (Fin, 0.842), Relational (Rel, 0.180) and Human (Hum, 0.110). The model exhibits satisfactory goodness of fit, having the RMSEA of 0.14.

Another comparative model does not contain organizational resources and is presented below.

$$
\begin{aligned}
\text{Perf} &= 4.532\text{Inf} + \epsilon_3 \\
\text{Inf} &= 0.251\text{Fin} + 0.048\text{Hum} + 0.051\text{Rel} + \epsilon_4
\end{aligned}
$$

Here ϵ_3 and ϵ_4 are random errors independent of each other.

6 Discussion, Contribution, and Limitations

6.1 Discussion

Fans prefer a winning team, thus, they invest their unconditional financial resources, hope and emotional attachments (Kaplan et al., 2011) as it makes no sense to invest in a team that is going to lose anyway (O'Reilly et al., 2008). The upper management sport personnel as profit maximizers (Szymanski, 2003) strive for higher levels of profitability by improving revenues and lowering costs (SportBusinessGroup and Jones, 2013; Samagaio et al., 2009). Revenue streams can come from various sources such as television broadcasting, tickets, sales of concessions, and sponsorship (Walliser, 2003). Why do sport teams in European football have high levels of competition when it comes to winning a seat for Champions League, winning a promotion to first professional leagues, or avoiding relegations to lower leagues? It is quite evident from such examples that on-field performance plays an important indirect role to achieving other off-field objectives mentioned above. And for that decisive reason, the objective of studying on-field performance through the lens of resources was the focus of this thesis without studying other objectives mentioned here despite their legitimate value as well.

Sport team managers as winning maximizers as discussed in research (Szymanski, 2003) are making continuous decisions on the management and utilization of sport resources in order to improve on-field performance for their respected teams. Obviously, one way to do that is by prioritization of sport resources in order to allocate them efficiently and effectively to improve on-field performance. This research was looking into using resource-advantage theory framework to build models that can rank or prioritize sport resources and in turn state which resources are actually influencing on-field performance more than others.

The R-A theory framework provided a certain structure to focus on specific resource groups such as informational, financial, human, relational, and organizational resources (Hunt and Morgan, 1995, 1996, 2005). Therefore, this thesis firstly looked into suggesting a "myriad of factors [within] international major sport leagues" (O'Reilly and Nadeau, 2006, p. 311, 327) in relation to on-field performance by performing Exploratory Factor Analysis (EFA) to arrive at certain factors based on the R-A theory structure. Secondly, to study the nature of created latent or unobservable factors in step one of EFA, this research performed Structural Equation Modeling (SEM) to build the suggested sport resource models, rank or prioritize the factors of sport resources, and highlight the influence of such resources on on-field performance.

6.2 Discussion on EFA

This step of research has built a certain resource list by using exploratory factor analysis, and compressed the original resource indicators from sixty-six to only eight sport resource factors based on the resource-advantage theory framework. Sport marketing and management research suggested "myriad of factors" O'Reilly and Nadeau (2006, p. 327) to help sport managers have a concise resource list to capitalize on. This step of thesis did exactly that and achieved only 8 initial factors in first step of EFA from the original resource indicators of 66. Such results would provide higher levels of effectiveness and efficiency to management of sport resources.

The sport resources' structure identification of this step of thesis involved discovering the basic structure underlying a set of original indicators of sport resources with intercorrelations among them and searched for smaller number of factors. The data reduction in relation to the construction of sport resource structure was done to a meaningful manageable level based on the priori R-A theory. The data here was suitable for EFA because of two reasons. First, the result of this step clearly indicated how many factors there should be, and secondly, it was clear what those factors were

(Rencher, 1995). These two reasons were evident in the KMO results in which all latent factors extracted deemed acceptable and reasonable.

6.3 Discussion on SEM

After conducting SEM, the sport resource-advantage approach helped highlighting the objective of higher on-field performance from the results of this thesis. First, resource factors were ranked according to their relative importance to on-field performance. Across both models created, financial, human and relational resources were the most contributors to on-field performance of European football teams. More importantly, the financial resources factor was ranked the most influencer to on-field performance more than any other factor in model 1. The ranking of resources here does not only provide a prioritization list, but also create a positive resource management structure that provides consistency and focus to sport teams. This step of thesis brought new important linkages between the objectives of sport teams discussed in introduction. The sport resource models which were created in this research were based on a resource-advantage theory platform and they explained how prioritization can affect on-field performance for European soccer clubs. Improving the outcome of on-field performance will affect other business objectives of sport teams such as profitability, fan growth, brand image, and sponsorship. Such resources-objective linkages come at a cost unfortunately.

Discussing such linkages is worth mentioning here as it is part of the holistic discussion coming from the results of this thesis.

1. Informational resources: Analyzing team playing information within sport field require the purchase of specialized analytical tools and hire specialized analysts to work with these systems to improve team results. This represents the feedback loops discussed in R-A theory (Hunt and Morgan, 1995). Unfortunately,

implementing such analytical informational systems lead to higher monetary operational costs. Sport teams in Europe already started capitalizing on such systems such. For example, Opta and Prozone completely provide a detailed description of on-field performance of individual players across both teams competing respectively. How is this linked to other objectives? Profitability might suffer a little from such costs associated with implementing these analytical systems. On the other hand, players and team value might improve dramatically once faced with informative challenges happening during games that might be overlooked by team managers.

2. Relational Resources: Positive relationship between sport team managers and players will more likely improve on-field performance. Thus, more sponsors might be attracted to teams that are playing as a cohesive unit and producing positive consistent on-field results than other teams that might not. Sponsors are more attracted to winning teams than the losing ones that will improve the brand image associated with such teams.

3. Human Resources: Sport managers and team players are surely at heart when it comes to 'teams' and winning. These human resources are an important reason for higher team profitability. They take part of image and shirt sponsorship, public relation activities, and consequently higher revenues. For example, Christiano Ronaldo record transfer price of 95 Million Euro in 2009 was completely paid in shirt sales revenues within the first year at Real Madrid.

4. Financial Resources: Results of this thesis showed the true importance of financial resources as the most effective category to on-field performance over the two models created. This resource category is about team and players market value, sales of players, and reduction of expenditures. The collection of these will build or hinder the team brand image in the long run. Sponsors are more

117

likely attracted to teams that enjoy good financial capability than teams that are struggling with debts. The brand equity of sponsors make them always look for the 'added value' from the association with football teams through sponsorship agreements.

5. Organizational Resources: Historical winning was the least favorable resource category in this thesis. Historical winning will not improve current on-field performance as it remains in the past, but teams can surely improve profitability by capitalizing on the memories and historical winnings of their teams. For example, currently it is noticeable to see that sport teams such as Barcelona FC opened a museum for fans to educate them about the club's historical championships. This association might trigger product and concession purchase in which will improve revenues accordingly that might offset the costs of running other operations within the team.

6.4 Contribution

This research has two key contributions as follows.

6.4.1 Ranking of sport resources

This research successfully ranked resource categories according to their weighted importance to on-field performance. Out of all categories of resources, it is clearly evident that financial resources accumulate at least 0.55 of relative weight of resource importance (ranking) in minimum and up to 0.842 in extreme cases. It is not surprising to see relational resources was ranked second in terms of influence over on-field performance. Relationship building between sport team managers and players squad is extremely important to both on-field and off-field. Players execute the manager's

tactical playing strategies, thus, positive, consistent, and effective relationship between them are deemed second best on a holistic overview across. Informational resources (defense) was ranked third in model 1. This goes in common with the sport managers approach that defense wins championships. Human resources was ranked third in model 1, but this is much related to relationship between coaches and players (relational resources) which was ranked second. These two categories of resources go together and are not distinct.

6.4.2 Resource-Advantage Sport Structure

This thesis highlighted the important of resource-advantage structure as significant priori for the on-field performance by suggesting two possible resource structures (models). This is very consistent with (Hunt and Morgan, 2005; Hunt, 2011) who clearly highlighted the importance to focus research on finding a taxonomy platforms or structures of resources to know the ranking effect of resource categories on a firm's performance as a strategic management tool to gain competitive advantage. This research conducted a micro-level study within European soccer clubs. Such a study was advocated by (Wernerfelt, 2014, p. 23) who stated that "in the absence of such a micro-foundation [study], it would be hard to build a broader body of theory and explore the boundaries of issues"

6.5 Managerial Implications

All of the sport resources which were studied and ranked in this dissertation need exquisite resource management techniques made by qualified sport team managers (Lechner and Gudmundsson, 2012) in order to acquire the highest on-field performance possible during a season. Therefore, team managers will surely can take advantage of the two models identified in this thesis by using them to prioritize resources of their teams according to discovered ranking. This, will more likely decrease the

managerial sacking rate that is increasing in sport clubs across sport leagues. Having a calculated resource management decision driven by the two models will enhance the managerial decisions around resources.

6.6 Limitations

The limitation section will focus on explaining four domains of limitations. These are theory, data, research model and personal limitations.

6.6.1 Theory

The decisions behind focusing on certain variables identified while ignoring others were merely based on the knowledge and understanding of the R-A theory framework. Therefore, such understanding of a given theory is still bounded or limited by certain human biases or point of view. On the other hand, the logic of choosing variables should only focus on the research context at hand. Furthermore, the context of research is based on the micro-level analysis of sport clubs; thus, investigating the managerial decisions around resource prioritization (ranking) was key to this research. The R-A theory has some inconsistency when it excluded the financial resources from the strategic category list while highlighting the prime goal of firms as superior "financial" performance. This research showed that the financial resource of sport teams proved to be "the highest" influencer over on-field performance, thus, it is surely strategic. Finally, R-A explained each category in greater detail without explicitly highlighting how are these resources connect together in a possible resource structure.

6.6.2 Data and Sample Size

The data set complied 5 seasons across 4 national leagues with 20 teams in 3 of these leagues while Germany Bundesliga has 18 teams, which amounts to (3 * 20 + 18) *5 = 390 observations. This is far too little to consider 66 explanatory indicators in the

same model especially because it must contain both seasonal and league effects. The researcher used all the data available despite that the sample size is **not** optimal as it was previously mentioned and is on the smaller side, but there are still limitations on what can be done. There are only five big leagues in Europe according to sport literature, and this dissertation used 4 out of these 5 leagues available. In other words, the sample size cannot be increased without going into smaller lower level leagues and making the data set more heterogeneous and representing varies different populations and dynamics.

6.6.3 Research Model (Estimation Method)

In first step of methodology, 66 explanatory indicators were compressed into just an eight latent factors using exploratory factor analysis. On the way to compression, a some part of information stored in the explanatory indicators gets discarded. Thus, the importance of this information cannot be tested and, as a result, the influence of the explanatory indicators on on-field performance in national championship cannot be fully tested.

To describe the situation mathematically, the factor analysis allows us to identify a handful of factors $F_1,..., F_p$ such that

Explanatory Variable 1 $= L_{11} * F_1 \quad +... + L_{1p} * F_p \quad + \quad \varepsilon_1,$

...

Explanatory Variable k $= L_{k1} * F_1 \quad +... + L_{kp} * F_p \quad + \quad \varepsilon_k,$

There are two terms here, systematic parts of the original indicators, and the idiosyncratic parts. Putting factors $F_1,..., F_p$ into a model for on-field performance will only describe the systematic parts have impact on on-field performance in national championship, but will not explain the impact of idiosyncratic parts. Therefore, this thesis was only able to rank the original indicators, and resources factors afterwards mainly based on the importance of the systematic parts in the model for on-field

performance. For the same reason, it was not able to test the significance of the overall influence of each **original**indicator to on-field performance. So stating any research questions based on step 1 only was not appropriate, and was only performed after the exploratory factor analysis and SEM final models were done at the second step. On the positive side, first, It was able to see the effect of each explanatory indicators on on-field performance in national championship and the effect expressed through the underlying factors. Secondly, the sport literature showed general understanding of this disadvantage, but highlighted the greater benefits of data reduction (i.e. combining two or more variables into a single factor with high commonality factor loading greater than .05), eliminating multicollinearity, and identification of groups of inter-related variables to explain how these are related to each other in relation to the dependent variable.

6.7 Future Research

6.7.1 Researchers

Future research should investigate the effect of sport resources to on-field performance for lower leagues which will positively improve the data set. Another interesting domain of future research should investigate a comparative study between the closed league system in North America such as Major League Soccer where teams do not relegate to lower level leagues and open league system such EPL in Europe where relegation and promotion are taking place. The views of the relationship between prioritization of sport resources and on-field performance in relation to other team business objectives might change between the two different league systems, which will provide a unique comparative study.

6.7.2 League Policy and Comparative Study

European football leagues should pay attention to distribution of resources across clubs participating in their leagues. There are teams such as Barcelona and Real Madrid accumulate more than 60 percent of the television, radio, and broadcasting league revenues. This adds a massive competitive advantage to those two teams over others within the same league and could possibly extend this advantage over other teams competing against them in European Champions League. The models discovered in this thesis can enhance the knowledge of leagues officials around the mechanism of resource prioritization within sport clubs. This micro-level knowledge will provide a legitimate internal resource structure of clubs and as a result can strengthen the prioritization for macro-levels (leagues) as both levels are rather connected (Porter, 1985; Barney, 1991).

6.7.3 Customers (Fan)

Research highlighted that fans always ask themselves "why would I bother going to a game that my team will lose anyhow?" (O'Reilly et al., 2008). Mason (1999) indicted that this uncertainty of fans around game results promote the sport economic league model by increasing sales or sport products including attendance, purchase souvenirs and concessions. The fans uncertainty of match results will be increased as more teams implement resource prioritization. These teams will have better know-how of resource platforms or structures, thus, improve their on-field performance accordingly. When more teams have higher on-field performance, the uncertainty around their head to head matches will be more as well since resources are immobile and difficult to duplicate (Barney, 1991). Therefore, fans will show up more to games and highly engage in pre-match activities.

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126

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Appendix A: Factor Analysis of Performance Indicators

Table 8: Descriptive Statistics for Performance Indicators

	Mean	Std. Deviation	Observations
Points	51.03	16.35	390
Goal Difference	0.00	25.40	390
Goals	51.32	16.56	390

Table 9: Correlations among Performance Indicators

	Points	GoalDif	Goals
Points	1.000	.953	.893
Goal Difference	.953	1.000	.920
Goals	.893	.920	1.000

Table 10: KMO and Bartlett's Test for Performance Indicators

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.755
	Approx. Chi-Square	1659.559
Bartlett's Test of Sphericity	df	3
	Sig.	0.000

Figure 5: Scree Plot for Performance Indicators
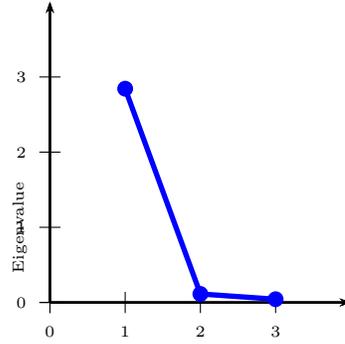
Table 11: Factor Loadings for Performance Indicators

	Factor 1
Points	.963
Goal Difference	.990
Goals	.929
Sum of Squared loadings	2.769
% of Variance	92.306
Cumulative %	92.306

Extraction Method: Principal Axis Factoring.

Appendix B: Factor Analysis of Informational Resource Indicators

Table 12: Descriptive Statistics for Informational Resource Indicators

Indicator	Minimum	Maximum	Mean	Std. Dev.
Cards From Fouls	28	96	57.18	14.72
Other Type Cards	3	60	20.26	9.92
Goals From Open Play	11	91	29.33	12.12
Short Passes	215	694	358.64	70.09
Ball Possession Per Game	38	67	50.00	4.55
Shots Conceded Per Game (Defensive 1)	7	19	13.41	2.08
Fouls Per Game (Defensive 4)	8	21	14.51	2.44
Total Shots Per Game (Offensive1)	9	22	13.41	2.22
Shots on Target Per Game (Offensive 2)	3	9	4.61	1.02
Dribbling Per Game (Offensive 3)	3	20	8.49	3.05
Fouled Per Game (Offensive 4)	9	22	13.75	2.25

Table 13: KMO and Bartlett's Test for Informational Resource Indicators

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.754
Bartlett's Test of Sphericity	Approx. Chi-Square	5263.19
	df	300
	Sig.	0.000

Figure 6: Scree Plot for Informational Resource Indicators
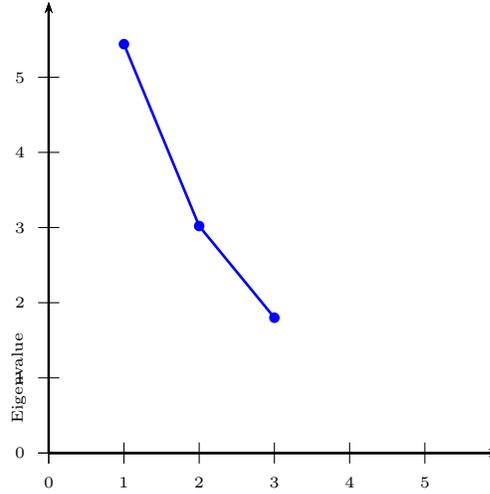
Table 14: Unrotated Factor Loadings for Informational Resource Indicators

Indicators	Factor		
	1	2	3
Cards From Fouls	-0.15	0.36	-0.28
Other Type Cards	-0.11	0.31	-0.30
Goals From Open Play	0.16	0.00	-0.15
Short Passes	0.06	0.01	-0.06
Ball Possession Per Game	0.26	0.12	-0.01
Shots Conceded Per Game (Defensive 1)	-0.04	-0.06	-0.02
Fouls Per Game (Defensive 4)	-0.06	0.26	0.41
Total Shots Per Game (Offensive1)	-0.02	-0.04	-0.24
Shots on Target Per Game (Offensive 2)	0.46	0.28	0.29
Dribbling Per Game (Offensive 3)	0.00	-0.08	0.29
Fouled Per Game (Offensive 4)	-0.01	0.16	0.16
Sum of Squared loadings	5.44	3.02	1.80
% of Variance	21.76	12.07	7.20
Cumulative %	21.76	33.83	41.03

Extraction Method: Principal Axis Factoring.

Table 15: Rotated Factor Loadings for Informational Resource Indicators

Indicators	Factor		
	1	2	3
Cards From Fouls		0.63	
Other Type Cards		0.61	
Goals From Open Play	0.87		
Short Passes	0.78		
Ball Possession Per Game	0.85		
Shots Conceded Per Game (Defensive 1)	-0.62		
Fouls Per Game (Defensive 4)		0.54	0.53
Total Shots Per Game (Offensive1)	0.82		
Shots on Target Per Game (Offensive 2)	0.89		
Dribbling Per Game (Offensive 3)			0.57
Fouled Per Game (Offensive 4)		0.53	0.53

Oblique Rotation, loadings less than 0.5 are excluded.

Appendix C: Factor Analysis of Financial Indicators

Table 16: Descriptive Statistics for Financial Indicators

Indicator	Minimum	Maximum	Mean	Std. Dev.
Total Player Purchased Expenditure	0.00	257.40	24.07	30.21
Average Annual Salary Per Player (in Millions)	0.51	11.63	3.18	2.41
Total Market Value for Goalies	0.60	45.00	8.50	7.48
Total Market Value for Defence	4.70	173.00	38.61	32.98
Total Market Value for Midfielders	6.65	271.58	52.96	48.68
Total Market Value for Forwards	2.00	259.25	39.42	39.85

Table 17: KMO and Bartlett's Test for Financial Indicators

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.827
Bartlett's Test of Sphericity	Approx. Chi-Square	4584.19
	df	55
	Sig.	0.000

Table 18: Factor Loadings for Financial Indicators

Indicator	Factor 1
Average Annual Salary Per Player	0.93
Total Market Value for Goalies	0.83
Total Market Value for Defence	0.93
Total Market Value for Midfielders	0.94
Total Market Value for Forwards	0.95
Sum of Squared loadings	6.57
% of Variance	59.70
Cumulative %	59.70

Extraction Method: Principal Axis Factoring.

Appendix D: Factor Analysis of Human Resource Indicators

Table 19: Descriptive Statistics for Human Resource Indicators

Indicator	Minimum	Maximum	Mean	Std. Dev.
Managers Tenure	1.00	27.00	3.23	3.63
Managers Tenure Wins	5.00	724.00	66.98	100.40
Managers Tenure Draws	3.00	237.00	33.80	37.67
Managers Tenure Losses	6.00	202.00	44.23	37.46
Number of Goalies	0.00	11.00	3.58	1.22
Number of Defenders	1.00	34.00	11.26	3.09
Number of midfielders	1.00	29.00	12.51	3.06
Number of Forwards	3.00	26.00	7.55	2.74

Table 20: KMO and Bartlett's Test for Human Resource Indicators

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.738
Bartlett's Test of Sphericity	Approx. Chi-Square	3894.88
	df	105
	Sig.	0.000

Figure 7: Scree Plot for Human Resource Indicators
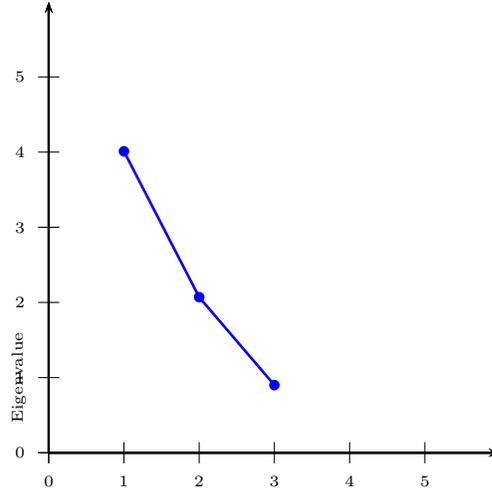
Table 21: Unrotated Factor Loadings for Human Resource Indicators

Indicators	Factor	
	1	2
Managers Tenure	0.57	-0.20
Managers Tenure Wins	-0.27	0.25
Managers Tenure Draws	1.02	-0.41
Managers Tenure Losses	-0.37	0.13
Number of Goalies	0.03	0.27
Number of Defenders	0.05	0.35
Number of midfielders	0.01	0.15
Number of Forwards	0.04	0.28
Sum of Squared loadings	4.01	2.07
% of Variance	26.70	13.81
Cumulative %	26.70	40.51

Extraction Method: Principal Axis Factoring.

Table 22: Rotated Factor Loadings for Human Resource Indicators

Indicators	Factor	
	1	2
Managers Tenure	0.97	
Managers Tenure Wins	0.96	
Managers Tenure Draws	0.98	
Managers Tenure Losses	0.87	
Number of Goalies		0.67
Number of Defenders		0.75
Number of midfielders		0.52
Number of Forwards		0.70

Oblique Rotation, loadings
less than 0.5 are excluded.

Appendix E: Factor Analysis of Organizational Resource Indicators

Table 23: Descriptive Statistics for Organizational Resource Indicators

Indicator	Minimum	Maximum	Mean	Std. Dev.
Domestic League Championships	0.00	32.00	4.31	6.80
Domestic Cup	0.00	26.00	3.65	4.97
Domestic Super Cup	0.00	21.00	2.00	3.93
UEFA Champions League	0.00	9.00	0.51	1.55
UEFA Europa League	0.00	3.00	0.44	0.88
UEFA Super Cup	0.00	4.00	0.29	0.80
Club's World cup	0.00	2.00	0.06	0.28

Table 24: KMO and Bartlett's Test for Organizational Resource Indicators

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.823
Bartlett's Test of Sphericity	Approx. Chi-Square	1825.15
	df	28
	Sig.	0.000

Table 25: Factor Loadings for Organizational Resource Indicators

Domestic League Championships	0.88
Domestic Cup	0.77
Domestic Super Cup	0.85
UEFA Champions League	0.79
UEFA Europa League	0.60
UEFA Super Cup	0.76
Club's World cup	0.65

Extraction Method: Principal Axis Factoring.