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*Linking Talent Management and Organizational Outcomes through the Lens of
Professional Football*

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List of Abbreviations

CB	Centre Back
CBL	Left Centre Back
CBR	Right Centre Back
CF	Centre Forward
cf.	Compare (Latin: 'confer')
CFL	Left Centre Forward
CFR	Right Centre Forward
CM	Centre Midfielder
CMDef	Defensive Centre Midfielder
CML	Left Centre Midfielder
CMLDef	Left Defensive Centre Midfielder
CMLOff	Left Offensive Centre Midfielder
CMOff	Offensive Centre Midfielder
CMR	Right Centre Midfielder
CMRDef	Right Defensive Centre Midfielder
CMROff	Right Offensive Centre Midfielder
CSM	Center for Sports and Management
DCs	Dynamic Capabilities
DMCs	Dynamic Managerial Capabilities
e.g.	For example (Latin: 'exempli gratia')
et al.	And others (Latin: 'et alii/aliae')
F	Acquisition fee
FBL	Left Fullback
FBLOff	Left Offensive Fullback

List of Abbreviations

FBR	Right Fullback
FBROff	Right Offensive Fullback
GK	Goalkeeper
H	Hypothesis
M	Model
ML	Left Midfielder
MLOff	Left Offensive Midfielder
MR	Right Midfielder
MROff	Right Offensive Midfielder
MV	Market value
OLS	Ordinary Least Squares
p.	Page
RBV	Resource-based view
RQ	Research Question
RVC	Relative value creation
SD	Standard Deviation
TM	Talent Management
VC	Value creation
VCA	Value creation via player acquisitions
VCD	Value creation via development
VCR	Value generation via player releases
VCT	Value creation via trading
VCY	Value creation via youth players
WHU	WHU – Otto Beisheim School of Management
WL	Left Winger
WR	Right Winger

Y Former youth player

List of Symbols

+	Statistical significance at least at the 0.1 level
*	Statistical significance at least at the .05 level
**	Statistical significance at least at the .01 level
***	Statistical significance at least at the .001 level
p	Probability (the probability value, p-value or significance of a test)
%	Percent
R ²	Coefficient of determination

1 Introduction

1.1 Background and Motivation

In the 1990s McKinsey consultants declared the *war for talent* (Chambers et al., 1998) as they came up with the idea that organizations faced a significant shortage of talent, especially for strategically important positions (Mellahi & Collings, 2010; Minbaeva & Collings, 2013). The underlying assumption was that organizations can achieve a sustainable competitive advantage over competitors by possessing the better talent to fill positions of strategic importance. The shortages of talent emanated from several reasons, such as changing demographics with decreasing birth rates and at the same time an increased number of retiring Baby Boomers. In addition, globalization led to an increase in the global mobility of the workforce. As these fundamental trends remained intact over the last decades, it is no surprise that Talent Management (TM) has become a key issue for companies and business leaders (Collings, Mellahi, & Cascio, 2019; Gallardo-Gallardo, Thunnissen, & Scullion, 2020; Groysberg & Connolly, 2015; Thunnissen, Boselie, & Fruytier, 2013) and continues to be amongst their top priorities all over the world (Cascio & Boudreau, 2016). Somaya and Williamson (2011, p. 75) even write “Perhaps it is time to declare that the war for talent is over ... talent has won!”.

With the increase in the importance of TM for practitioners, it also captured a high degree of attention from academic scholars (e.g., Beamond, Farndale, & Härtel, 2020; Cappelli & Keller, 2017; Cascio & Boudreau, 2016; Collings, Mellahi, & Cascio, 2017; Collings, Scullion, & Vaiman, 2015; De Boeck, Meyers, & Dries, 2018; Kravariti & Johnston, 2020; McDonnell, Collings, Mellahi, & Schuler, 2017) and the body of academic literature of the new research field has evolved significantly, especially since about 2009 (e.g., Gallardo-Gallardo, Dries, & González-Cruz, 2013; Gallardo-Gallardo et al., 2020; McDonnell et al., 2017; Meyers, van Woerkom, Paauwe, & Dries, 2020). Mainly based on theory from the resource-based view

(RBV) (Barney, 1991), human resource management, organizational behavior, and others, the field has been gradually maturing (Khoreva & Vaiman, 2021; Thunnissen et al., 2013; Thunnissen & Gallardo-Gallardo, 2019) and there are two dominant research streams: “the management of high performers and high potentials, and the identification of strategic positions and talent management systems” (McDonnell et al., 2017, p. 86).

Despite the steady advancement of the field, it faces some key challenges, e.g., a variety of definitions for talent and TM (e.g., Cappelli & Keller, 2017; McDonnell et al., 2017; Thunnissen, 2016), the limited number of empirical research (Khoreva & Vaiman, 2021; Lewis & Heckman, 2006; Sharma, 2021) and the missing link between TM and organizational performance (Collings et al., 2019). A literature review of Thunnissen and Gallardo-Gallardo (2019) has shown that only 43.1% of the analyzed articles presented an explicit definition of TM, while the others did either not provide a definition they based upon or used multiple definitions without clearly focusing on one. The variety of definitions led to inconsistent theories and stories (Gallardo-Gallardo & Thunnissen, 2016) and increased the challenge for sound theory-based empirical research.

Additionally, TM scholars who are aiming for sound empirical research face challenges regarding data availability. Most quantitative studies build on surveys, questionnaires, or structured interviews to generate data (e.g., Festing, Schäfer, & Scullion, 2013; Tatoglu, Glaister, & Demirbag, 2016; Tymon, Stumpf, & Doh, 2010) as behavioral data that is applicable for TM research is scarce and often not available on a sufficiently large scale for many research designs. More than one-third of empirical research in TM is built on relatively small data sets with less than 50 respondents (Thunnissen & Gallardo-Gallardo, 2019). Last but not least, there is only limited research, that builds on panel data (e.g., Son, Park, Bae, & Ok, 2020), and thus accounts for unobserved heterogeneity between companies (Krebs & Wehner, 2021). This dearth of sound empirical research hinders the progress of TM and “prevents academics from having a clear and accurate picture of the field” (Sharma, 2021, p. 64).

Partially resulting from the limited amount of empirical research, the missing link between TM and organizational performance (Collings et al., 2019) is another key challenge in the field (e.g., Saridakis, Lai, & Cooper, 2017). This link is particularly important as it is needed to support the mainly implicit claims that TM can be a source of a sustainable competitive advantage and value creation (e.g., Barney, 1991; Cascio & Boudreau, 2016; Lepak & Snell, 1999; Sparrow, Scullion, & Tarique, 2014). While Sparrow & Makram (2015) build a foundation and roadmap to establish a link between value and TM from a theoretical perspective, there is also much more empirical research required for the advancement of the field.

While this dissertation will not solve all the problems of TM, it aims to provide empirical evidence to link TM and organizational performance and especially value creation building on a clear definition of talent and TM. Complementary to the extension of the empirical foundation of the academic literature, practical implications are drawn for managers and organizations generally, and for managers of football clubs specifically as the research design for this thesis is developed around TM in professional football.

Formulated explicitly into one overarching guiding research question, my dissertation shall contribute to the understanding of *how TM can contribute to organizational success and create value*.

1.2 Research Questions and Theoretical Relevance

Within this dissertation, the overarching guiding research question is disaggregated into three distinct but interlinked pieces of research that address the gap of empirically linking TM to organizational outcomes, such as organizational performance and value creation. First I will develop and apply a data-driven approach that identifies positions pivotal to organizational performance. While the approach is – as well as in the two other research contributions – empirically applied to professional football, it builds a foundation that could be adopted and

applied to other industries. Second, I investigate sources of value creation through TM across the whole TM cycle of attracting, developing, and retaining talent and identify talent architectural antecedents of value creation. Third, I will build on this analysis and shift towards a more dynamic and managerial view by applying the Dynamic Managerial Capabilities (DMCs) view to investigate the managerial impact on value generation. Each piece of research will contribute to the overarching research question by investigating one of the following questions:

RQ I: What are pivotal positions where talents make the highest contribution to organizational performance?

RQ II: What are the sources and antecedents of value creation through TM?

RQ III: How do DMCs of the manager responsible for talent acquisition impact value generation from talent acquisition?

Due to the inconsistencies in definitions of TM and talent (e.g., Cappelli & Keller, 2017; McDonnell et al., 2017; Thunnissen, 2016), this dissertation cannot make theoretical contributions without building on a clear definition. Like most research contributions that present an explicit TM definition (Thunnissen & Gallardo-Gallardo, 2019), the research pieces of this dissertation build on Collings' and Mellahi's definition. they defined TM as “activities and processes that involve the systematic identification of key positions which differentially contribute to the organization’s sustainable competitive advantage, the development of a talent pool of high potential and high performing incumbents to fill these roles, and the development of a differentiated human resource architecture to facilitate filling these positions with competent incumbents and to ensure their continued commitment to the organization” (Collings & Mellahi, 2009, p. 304). Regarding the definition of talent itself, most scholars follow the definition of talent as “those individuals who can make the greatest difference to organizational performance, either through their immediate contribution or in the longer term by

demonstrating the highest levels of potential” (Tansley & Tietze, 2013, p. 1800), which is suitable to investigate the link between TM and organizational success and value creation.

As many scholars identify pivotal positions as the starting point of any TM consideration (e.g., Cascio & Boudreau, 2016; Collings et al., 2017), RQ I focuses on empirically establishing a link between pivotal positions and organizational performance. It contributes to the literature by providing a data-driven approach to quantifying the contribution of individual positions to organizational performance, which can also be transferred outside of sports to identify pivotal positions in organizations. This piece of research does also contribute to the ongoing discussion of the definition of TM. The most frequently used definition of TM as “activities and processes that involve the systematic identification of key positions [...] and the development of a differentiated human resource architecture to facilitate filling these positions with competent incumbents” (Collings & Mellahi, 2009, p. 304) indicates a sequential approach of first identifying pivotal positions and then trying to fill them. My research raises the question of whether the availability of talent for a specific position does impact its strategic importance and thus entangling the processes of identifying pivotal positions and trying to fill them.

RQ2 contributes to the TM research by addressing the question of value generation through TM which is a core challenge for the field to develop (Sparrow & Makram, 2015). This study is to the best of my knowledge the first empirical study that assesses value creation through TM for its three key stages of identification and acquisition of talent, talent development, and talent retention or release (Schiemann, 2014). As talents are often seen as strategic assets by TM scholars (e.g., Gallardo-Gallardo, Nijs, Dries, & Gallo, 2015; Odiorne, 1984; Sparrow, 2019; Thunnissen et al., 2013) the study builds on ideas and approaches from the field of value creation through asset portfolio management (e.g., Baer, Kempf, & Ruenzi, 2009; Chevalier & Ellison, 1999; Chuprinin & Sosyura, 2018; Cici, Jaspersen, & Kempf, 2017; L. Cohen, Frazzini, & Malloy, 2008; Massa & Rehman, 2008; Patel & Sarkissian, 2017; Prather, Bertin, & Henker, 2004) and thus analyzes value creation using a talent portfolio

approach where every talent in the talent pool is valued. While this approach can lay the theoretical and empirical foundation for future research regarding value creation from TM, the study also contributes by identifying antecedents of value creation. It also adds insights regarding the open question of the impact of movement within a talent pool (Sharma, 2021) as well as the impact of the talents' age on value creation (Sparrow, 2021). In addition, as this piece of research uses data from professional football it also adds valuable insights for sports managers, especially sporting directors of football clubs, as for many clubs value creation through TM is a vital component of their business model (Lenz, Schmidt, & Schreyer, 2020) and can be significant enough to create a sustainable competitive advantage (Tacke, Krüger, Beiderbeck, Frevel, & Küpper, 2020).

RQ3 adds to the previous question by focusing on talent acquisition as one of the three key steps to TM (Schiemann, 2014) and the managerial impact of the sporting director, being the one responsible for talent acquisitions. Therefore it further adds to our understanding of value creation through TM. Additionally, by building on the theory of Dynamic Capabilities (DCs) (Teece, Pisano, & Shuen, 1997) and DMCs (Helfat et al., 2007) it answers the call to account for dynamism in TM (Sharma, 2021). Last but not least, it is relevant as it adds to the literature on DMCs to understand the managerial impact on strategic change (Helfat & Martin, 2015). The three underpinnings of DMCs human capital, managerial social capital, and managerial cognition are lacking joint examination in different contexts (Helfat & Martin, 2015). By examining their impact on value generation through TM, and being amongst the first ones to empirically assess their impact on firm resources, I intend to contribute to the understanding of the DMC's underpinnings' joint impact on firm resources and strategic change.

1.3 Research Approach and Dataset

While the three RQs contribute to a better understanding of how TM can contribute to organizational success and create value, the corresponding research gaps are sufficiently distinct to be investigated separately and contribute to a different field of research in TM and different research streams. Therefore I examine the RQs in three stand-alone, yet interlinked research papers.

All three papers have their theoretical foundations in the RBV (Barney, 1991) and use professional sports as a research setting. Professional sports as a research setting provides an unparalleled labor market laboratory to conduct empirical analysis (Kahn, 2000) and is often used to test RBV theories (e.g., Berman, Down, & Hill, 2002; Moliterno & Wiersema, 2007; Poppo & Weigelt, 2000; Sirmon, Gove, & Hitt, 2008) and as a laboratory for TM research (e.g., Groysberg, Hecht, & Naik, 2019; Kassis, Schmidt, Schreyer, & Torgler, 2017; Lenz et al., 2020; Merkel, Schmidt, & Torgler, 2017). There are several key advantages in professional sports research settings that overcome limitations and challenges in TM research. Firstly, it offers a focus on pivotal talent pools and thus on talents and there is a clear link to their impact on organizational performance (Merkel, Chan, Schmidt, & Torgler, 2021). Second, there is partial public transparency on TM architecture; for example, the size of the talent pool and a club's talent acquisition and retention strategies (van Ours & van Tuijl, 2016) are often known and many economic and non-economic indicators are available which broadens the often rather narrow set of organizational outcomes (Collings, 2014; Collings et al., 2017). The third advantage, compared to other industries, is the rather continuous availability of valuations of the key talents, the players. These valuations are regularly updated and an established data source in academic research (e.g., Peeters, 2018; Prockl & Frick, 2018; Serna Rodriguez, Ramírez Hassan, & Coad, 2019). The availability of this data can help scholars to overcome the challenge of evaluating and measuring outcomes of TM (e.g., Cappelli & Keller, 2014; Langenegger, Mahler, & Staffelbach, 2011).

Benefitting from these advantages, Paper I builds on data from the Bundesliga, the highest German football league and one of the top four football leagues in the world. To evaluate the importance of different positions and identify pivotal positions for success the required data were scraped from the website kicker.de, an established website among research scholars (e.g., Hanke & Kirchler, 2013; Meister, Faude, Ammann, Schnittker, & Meyer, 2013; Schimpchen, Skorski, Nopp, & Meyer, 2016; Sutter & Kocher, 2004). Building on a dataset from 1,836 matches from 2013/14 until the 2018/19 season this paper uses random forests to identify the positions that make the highest contribution to organizational success. Running several random forest simulations, the mean decrease in accuracy when excluding a single variable is used as a key measure.

In Paper II, I used data from the top four football leagues in the world – the English Premier League, LaLiga in Spain, Serie A in Italy, and Bundesliga in Germany – beginning with the 2014/2015 season and ending with the beginning of the 2019/2020 season. I created a unique dataset by systematically collecting the market value of each player of each club for each season of our dataset. These data were scraped from the online football data platform transfermarkt.de, an established data source for football-related research (e.g., Matesanz, Holzmayr, Torgler, Schmidt, & Ortega, 2018; Peeters, 2018; Prockl & Frick, 2018; Schreyer, 2019; Serna Rodriguez et al., 2019). To assess the antecedents of value creation in the resulting panel dataset, I used random-effects models.

In Paper III, I collected data on 1,307 player acquisitions in the German Bundesliga from transfermarkt.de and enriched them with data to operationalize managerial human capital, managerial social capital, and cognition of the manager responsible for each acquisition. To analyze this dataset, I conducted an ordinary least square regression analysis with different models using White (1980) errors robust to heteroscedasticity.

1.4 Outline and Abstracts

The structure of this dissertation is comprised of 5 parts (Figure 1.1). Section 1 introduces the dissertation project and concludes with the three papers' abstracts. In the following Sections 2 to 4, these three distinct papers are then individually presented. Last but

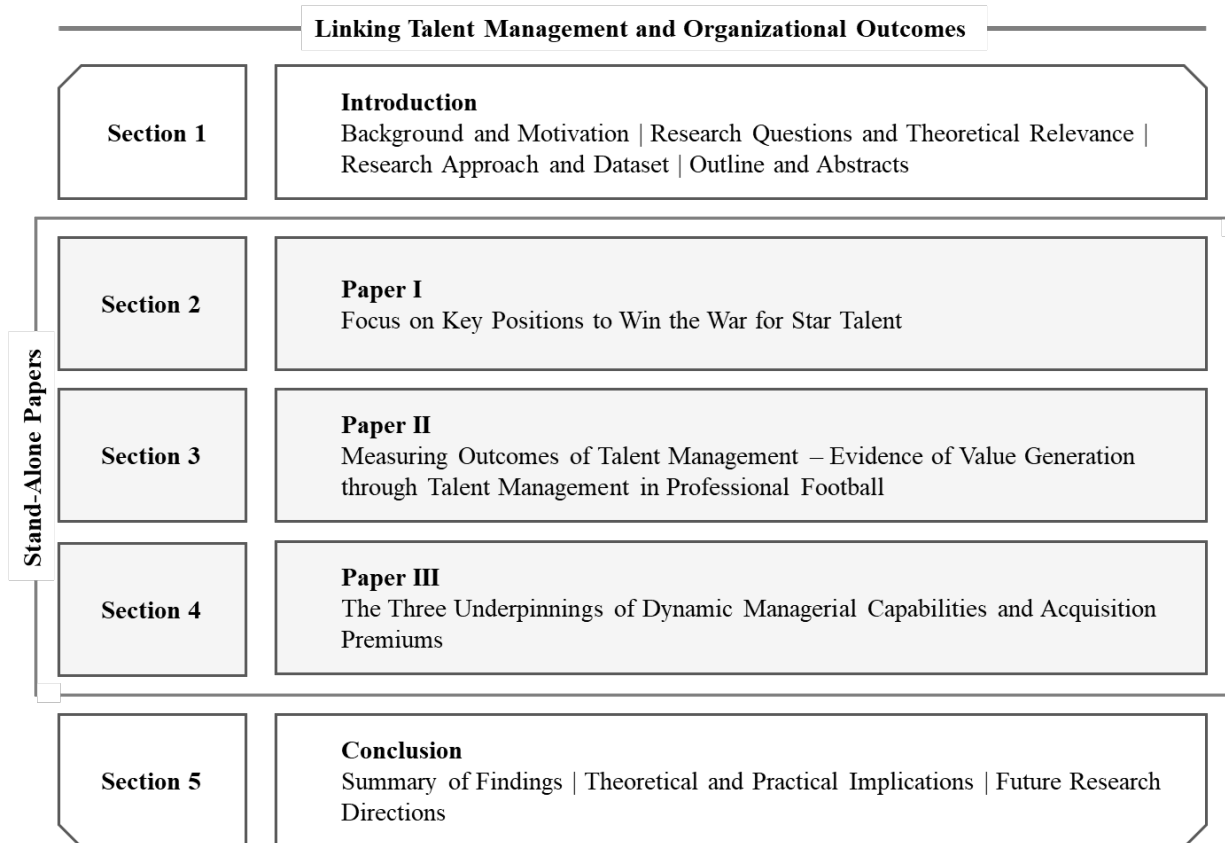


Figure 1.1 Structure of the Dissertation.

not least, Section 5 offers an overarching conclusion, building on the generated findings of all three papers, outlining implications for academia and practice as well as suggesting future research directions.

1.4.1 Paper I: Focus on Key Positions to Win the War for Star Talent

Understanding the impact of individual roles on organizational outcomes is key to TM but proves challenging. We present and apply an approach to identify the impact of individual positions on organizational success. Building on lineups from professional football, we apply random forests to investigate which positions on the field matter most for organizational success

and compare the results to the contributions to the leadership, the head coach. Building on lineups from 1,836 matches, we find that defensive positions are more important to winning than offensive positions and that the role of the head coach is more important than all positions on the field, except the positions of the fullbacks. We also find that positions on the left side of the field are more important to winning than positions on the right side of the field. In line with the finding that positions with a lower supply-demand ratio are more important to organizational success, these findings highlight that there is an interdependency between the availability of talent to fulfill a specific position and the importance of this position for organizational success. Therefore, we propose to slightly adopt the definition of TM and include the notion of a talent shortage for a specific role.

Publication status. This paper was co-authored by Prof. Boris Groysberg, Prof. Dr. Sascha L. Schmidt, and Abhijit Naik. At the time of submission of this dissertation, an adopted version was being prepared for submission to *California Management Review*.

1.4.2 Paper II: Measuring Outcomes of Talent Management – Evidence of Value Generation through Talent Management in Professional Football

Empirically creating the link between TM and value creation is challenging across organizations but required for further advancement of the field. Using European football as a laboratory, we investigate value generation drivers through TM across different organizations. Borrowing from asset portfolio management research and building on the theory of value for TM, we investigate how the turnover of talent, the size of the talent pool, and the maturity of the talent impact abnormal value creation through TM. Relying on a unique panel dataset of 59 organizations in the four biggest football leagues, we identify significant differences in abnormal value generation, proving that successful TM can lead to a significant competitive advantage. We identify the first set of antecedents of abnormal value creation through TM and reveal that turnover has a quadratic relationship with abnormal value creation. We find that a larger, as well as a talent pool with more mature talents, reduces abnormal value creation.

Publication status. This paper is co-authored by Prof. Dr. Sascha L. Schmidt. At the time of submission of this dissertation, this paper has been under review with the *British Journal of Management*. Minor adjustments have been made to maintain consistency within this dissertation.

1.4.3 Paper III: The Three Underpinnings of Dynamic Managerial Capabilities and Acquisition Premiums

To better understand how managers impact strategic change, we investigate the three underpinnings of DMCs. Taking football as a laboratory, we analyze the joint impact of managerial cognition, managerial social capital, and managerial human capital on the sporting director's DMCs and the premiums paid for resource acquisitions he is responsible for. We answer the question, of how the three underpinnings of DMCs impact strategic change together and which of them matters most. Relying on 1,307 acquisitions of football players, our findings reveal that an increase in managerial cognition (measured as attention) leads to a reduction of acquisition premiums while higher managerial social capital has the opposite effect. Counterintuitively, we find that higher managerial human capital can have a negative impact on changes in the resource base, leading to higher acquisition premiums, exacerbated by managerial hubris. Comparing the absolute and relative sizes and marginal effects of the three underpinnings of DMCs reveals that a change in attention has the biggest impact on acquisition premiums under average conditions, but for managers with high hubris, the impact of managerial human capital on acquisition premiums exceeds the impact of managerial attention.

Publication status. This paper is co-authored by Prof. Dr. Sascha L. Schmidt. At the time of submission of this dissertation, this paper was being prepared for submission to *Journal of Sports Management*. Minor adjustments have been made to maintain consistency within this dissertation.

2 Paper I: Focus on Key Positions to Win the War for Star Talent¹

Offense sells tickets, but defense wins championships

– Paul “Bear” Bryant, former college American football coach –

2.1 Introduction

For more than 30 years, Bryant’s adage has been subject to debate in American football and in many other sports as well. It also led to an extensive interest of many scholars, who investigated Bryant’s adage in its original scope in American football (e.g., Robst, Vangilder, Berri, & Vance, 2011) and with an enlarged scope into other sports and including different leadership roles (e.g., Juravich, Salaga, & Babiak, 2017; Smart, Winfree, & Wolfe, 2008; Smart & Wolfe, 2003) to identify which positions or leadership roles matter most for organizational success. Building on the resource-based view (RBV) (Barney, 1991) and Upper Echelon Theory (Hambrick & Mason, 1984), previous research mainly assessed selected characteristics of the human resources filling the investigated roles and their impact on organizational performance. Therefore the results strongly depend on the characteristics that are included in the analysis and on their operationalization (e.g., Smart et al., 2008; Smart & Wolfe, 2003). While this is a typical way how research evolves in a certain area, advancements in data analysis methods and computational power offer possibilities to investigate some research questions with fewer limitations and enlarged scopes.

We seek to use these advancements to investigate the contribution of leadership and talents deployed in specific roles to organizational success in professional football. Building on the RBV, Collings and Mellahi (2009, p. 304) define Talent Management (TM) as “activities

¹ Groyberg B., Schmidt, S. L., Naik, A, & Krüger, H. (2022). Focus on Key Positions to Win the War for Star Talent. Unpublished Working Paper.

and processes that involve the systematic identification of key positions which differentially contribute to the organization's sustainable competitive advantage, the development of a talent pool of high potential and high performing incumbents to fill these roles, and the development of a differentiated human resource architecture to facilitate filling these positions with competent incumbents and to ensure their continued commitment to the organization". This definition highlights the importance of developing an approach and identifying key positions as it is the first step to gaining a competitive advantage through TM.

By building on this definition and consequently on the RBV, on which previous comparable studies are based (e.g., Smart & Wolfe, 2003), we are in line with many other scholars who test RBV theories in research settings with professional sports teams (e.g., Berman et al., 2002; Moliterno & Wiersema, 2007; Poppo & Weigelt, 2000; Sirmon et al., 2008).

In our study, we use random forests to investigate which positions on the field matter most for organizational success and compare the results to the contributions to the leadership, in our case the head coach.

While this is an interesting question from a scholar's perspective it is no less interesting for practitioners. National football federations invest millions of dollars in talent development to succeed in the FIFA World Cup and club owners spend big money to win the UEFA Champions League with their team. The more money flows into the football industry, the more the international war for star talent (Chambers et al., 1998) worsens. With eleven players on the field and even more positions, where a player could potentially be placed, it would be beneficial for practitioners to know, which position matters most, and in which position the focus of TM and the related attention and money spent, should be. Following the well-established definition of talent from (Tansley & Tietze, 2013, p. 1800) who define talents as "those individuals who can make the greatest difference to organizational performance, either

through their immediate contribution or in the longer term by demonstrating the highest levels of potential”, we use line-up data from the Bundesliga for all matches over six consecutive years to identify pivotal positions in professional football. We find that fullbacks have the highest contribution to organizational success on the field followed by the head coach and the goalkeeper. Additionally, we find that the position of the left fullback has a slightly higher contribution to organizational success than the right fullback, which is in line with the RBV (Barney, 1991) – the theory on which the talent definition from Tansley and Tietze (2013) is built on – which outlines that rare resources can be a source of competitive advantage.

2.2 Prior Research on Leadership and Human Resources Effects

2.2.1 Research on Executive’s Impact in and on Business

Most research that investigates the impact of board members on organizational outcomes concentrates on chief executive officers (CEOs), which are the dominant power on the board and have the most exposed position (Finkelstein, 1992). While earlier research suggests a limited influence of CEO’s on firm performance (e.g., Day & Lord, 1988; Hambrick & Mason, 1984), more novel research with improved methodologies, found a substantial effect of CEOs on organizational outcomes (e.g., Carpenter, Geletkanycz, & Sanders, 2004; Hambrick & Quigley, 2014; Mackey, 2008) which has increased over time (Quigley & Hambrick, 2015). Starting with Fitza (2014) there is a debate on the methodological approach and the resulting outcomes ongoing.

Typical findings for the CEO’s impact on firm performance were mostly in the range of 10-20% (Hambrick & Quigley, 2014; Quigley & Graffin, 2017) but Fitza (2014, 2017) argues that most of the previous studies, which applied methodological choices typical to the research stream did overestimate the CEO effects by almost the same magnitude. Fitza (2014, 2017) argues that models that estimated fixed effects result in random variance which is added

to the CEO's contribution to firm performance and therefore leads to a significant overestimation of the CEO's contribution. This debate shows that the question of the size of the CEO's influence on firm performance is not closed.

While the CEO is the board role with the highest research attention, the CFO's influence on firm performance has also been investigated and found to have significant effects on organization performance as well but less than the CEO (e.g., Six, Normann, Stock, & Schiereck, 2013).

2.2.2 Research on Executive's Impact in and on Sports

The question of individuals' contribution to organizational performance has also been a relevant topic in sports management research. There is a lower number of relevant work and less established methodological approaches compared to the general research stream outside of sports organizations, where i.e. the family of variance partition methodology (VPM) is the "accepted analysis for gauging the influence of chief executive officers" (Hambrick & Quigley, 2014, p. 474). In sports instead, almost all studies build on a selection of managerial and organizational characteristics to assess their link to performance and the contribution of different leadership roles to organizational success.

Brian (2013, p. 428) assesses "the relative importance of managerial inputs: owners, general managers, and managers" for baseball and American football, finding that manager's and general manager's contributions matter in both sports but manager's contributions relative to general manager's contributions are higher in American football than in baseball. Peeters, Salaga, and Juravich (2015) assess the impact of upper and middle managers on team performance as well as their managerial ability and match quality between the different managers. Also for baseball, some scholars investigated the contributions of players and managers to performance and winning (Smart & Wolfe, 2003), focusing on input variables that

can be attributed to offensive or defensive players and characteristics of the head coach (Smart & Wolfe, 2003). They found that the players have a high contribution that exceeds the manager's contribution, also when including more managerial aspects in the analysis (Smart et al., 2008). Similar results but with a more sophisticated approach building on variance decomposition have been found for American football, where the contribution of the quarterback as one of the organizational leaders on the field exceeds the contribution of the team manager significantly (Groysberg et al., 2019).

Moreover, there is a large number of studies that investigate the impact of managerial characteristics on team performance (e.g., Brown, Farrell, & Zorn, 2007; Hall & Pedace, 2016; Juravich et al., 2017; Roach, 2016; Singell, 1993), with less focus on investigating the contribution of different roles to organizational success.

In addition to the research on a leader's contribution to organizational performance, there is a research stream, where a leader's impact on player performance and player development is investigated in more detail for different sports. Bradbury (2017), Kahn (1993), and Pitts and Evans (2019) investigated the impact of managers on the performance of MLB players. Berri, Leeds, Leeds, and Mondello (2009) assessed the impact of head coaches on their player's productivity in basketball. Bridgewater, Kahn, and Goodall (2011) investigated which managerial characteristics helped head coaches to improve the different types of players in football.

All of these and the before-mentioned studies except Groysberg, Hecht, and Naik (2019) have in common that they chose some managerial characteristics (e.g., experience, salary, match quality) to estimate the impact and contribution of different roles on organizational performance or talents. While those approaches offer the advantage of being widely known and requiring less computational power, the results strongly depend on the selection and

operationalization of key independent variables, as can be seen in different results such as in Smart and Wolfe (2003) and Smart et al. (2008).

By applying standard variance decomposition, Groyberg et al. (2019) use a method that is part of the VPM family, which is the “accepted analysis for gauging the influence of chief executive officers” (Hambrick & Quigley, 2014, p. 474). Applying this method offers the advantage to increase the focus on the investigated roles themselves and less on the characteristics of the people occupying these roles. As previously applied methods often only offer the possibility to assess the contribution of managerial characteristics of a few roles to avoid overfitting, variance decomposition offers theoretically the possibility to include many different roles (e.g., positions on the field) in an analysis of the contribution to organizational outcomes². With advances in computational capabilities more sophisticated models “enable a reasonable decomposition of the model variance” (Grömping, 2007, p. 139). Building on this progress, we want to add to the literature on roles’ contribution to organizational success and answer the following two questions:

- Which on-field position matters most for organizational success in professional football?
- What is the head coach’s contribution to organizational success in professional football?

2.3 Methods

2.3.1 Data and Sample

To answer our research questions, we used data from the Bundesliga, the highest German football league and one of the top four football leagues in the world, and evaluated the

² The complexity of the variance decomposition algorithm following Grömping (2007) is $O(n!)$ where n is the number of variables and therefore resulting in a limitation through lack of computational power for high number of variables.

importance of individual positions on the football field to winning. Our dataset included the win-draw-loss outcomes and the players of the starting eleven including their position on the field for each match of the regular season, for every team over six consecutive years starting with the 2013/2014 season and ending with the 2018/2019 season, resulting in a total of 1,836 matches.

Our data set included 45 explanatory variables; 26 position variables (see Figure 2.1), one variable for the head coach, 14 match performance variables, and four other match variables. An overview of the included variables can be found in Table 2.1.



Figure 2.1. Overview of Included Position Variables.

Match Performance Variables	Match variables
Match Result	Team
Goals Home	Opponent
Goals Away	Match Day
Shots	Location
Distance Covered	
Played Passes	
Successful Passes	
Missed Passes	
Possession	
Won Duels	
Fouls Committed	
Fouls Suffered	
Offsite	
Corners	

Table 2.1 Overview of Included Non-Position Variables.

We generated these data using the website kicker.de, which is an established website for football research, especially for the German Bundesliga, and is widely used by scholars (e.g., Hanke & Kirchler, 2013; Meister et al., 2013; Schimpchen et al., 2016; Sutter & Kocher, 2004).

Our dataset includes all 988 different players, who have been at least once in the starting eleven of a Bundesliga club in the 1,836 matches from the 2013/14 season to the end of the 2018/19 season and the 78 different head coaches, which have been coaching a team in at least one match.

2.3.2 Estimation Method

We considered several methods to establish relative importance: variance decomposition following Grömping (2007) who laid out the theoretical groundwork, simple linear regression with variance contribution averaged over the entire sample space, random forests, and gradient boosted decision trees. The explanatory power of the model comes from the switching of players between teams and between positions. As a result of the number of variables in the data set, variance decomposition using Grömping’s methodology and linear regression was ruled out as the complexity of the algorithms is $O(n!)$ where n is the number of variables. For random forests and gradient boosted decision trees we used R-packages “randomForest” and “gbm” respectively. A disadvantage of random forests is that the “randomForest” package can have at most 53 levels in a categorical variable but most of the variables in our data set had more than 53 levels. However, this disadvantage can be overcome by using appropriate numerical maps. The issue with gradient boosted decision trees is that it imputes missing values which could lead to spurious variable importance. Missing values are inherent to occur in our dataset, as not each of the 26 positions that are included in our model can be occupied by the eleven players that form the starting eleven of a match. Additionally, the algorithm is extremely sensitive to parameter tuning and it is an incremental model as compared to random forests. Lastly, random forests are prone to overfitting, which in this scenario is not necessarily a disadvantage. For the reasons mentioned above, we decided to use random forests for establishing variable importance with a mean decrease in accuracy as the key measure. When the accuracy of the random forest decreases due to the exclusion of a single variable, this variable is deemed important, and therefore variables with a large mean decrease in accuracy are more important.

2.4 Results

2.4.1 Descriptive Statistics and Bivariate Results

In Table 2.2 means, standard deviations, and correlations among the numerical variables, which are included in the model as well as the match result (operationalized as 1 for a win, 0 for a draw, and -1 for a loss) and location (operationalized as 1 for home and 0 for away) are presented. Teams that play at home score on average 1.66 goals, while teams that play away from their home score on average 1.27 goals, which results in a significant pairwise correlation between the location of the match and the results. Also, most of the other match statistics show a significant pairwise correlation with the match result. More shots, higher covered distance, more played passes, more successful passes, higher possession, fewer fouls committed, and more fouls suffered as well as more corners correlate (not surprisingly) significantly with a better match outcome.

2.4.2 Results of Random Forests Analysis

We developed four different models using random forests: regression model including draws (model 1), regression model excluding draws (model 2), classification model including draws (model 3), and classification model excluding draws (model 4). The motivation for developing models without draws is because draws are typically very difficult to predict. To ensure a stable mean measure for all positions, we simulated each model 200 times. We found that both classification models were very poor in appropriate classification and had a negative net variable contribution to accuracy, and hence their results were discarded. Both regression models were quite robust and both had a positive net variable contribution to accuracy. The results of models 1 (M1) and 2 (M2) are presented in Table 2.3. Both models result in the left fullback being the position on the field that contributes most to organizational success, followed by the right fullback. The contribution of the left fullback to the overall net variable contribution

is 12.45% using M1 and 11.94% using M2. The contribution of the right fullback is 11.31% using M1 and 11.05% using M2. The next most contributing role is the head coach (9.52% using M1, 9.95% using M2), followed by the goalkeeper (8.65% M1, 8.83% M2). Having simulated these random forests regression models 200 times, we found that the average contributions of most roles do significantly ($p < 0.001$) differ from each other, using a t-test. The contributions of all positions are shown in Table 2.3.

To test the robustness of our results, we included match variables and other control variables in our analysis (see Table 2.1). Our results remained similar with the left fullback being the position with the highest explanatory power of the variance in match results and defensive positions including the goalkeeper, occupying the three positions with the highest contribution.

2.5 Discussion and Conclusion

2.5.1 Interpretation of Empirical Results

In this study, we analyzed 1,836 Bundesliga matches to answer our research questions about which on-field position matter most for organizational success in professional football and what is the impact of the head coach's contribution to organizational success. We used random forests regression to estimate the relative importance of each of a set of 26 pre-defined position variables.

There are three empirical results that we want to discuss in detail: (1) defensive positions are more important to winning than offensive positions, (2) positions on the left side of the field are more important to winning than positions on the right side of the field, (3) the role of the head coach is more important to winning than all positions on the field, except the positions of the fullbacks.

Paper I – Identification of Pivotal Positions

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Mean	SD	Minimum	Maximum
1	MatchResult	1.000																0.00	0.87	-1.00	1.00
2	MatchDay	0.000	1.000															17.50	9.81	1.00	34.00
3	GoalsHome	0.000	0.035*	1.000														1.66	1.37	0.00	8.00
4	GoalsAway	0.000	0.017	-0.102***	1.000													1.27	1.20	0.00	7.00
5	Location	0.197***	0.000	0.000	0.000	1.000												0.50	0.50	0.00	1.00
6	Shots	0.271***	-0.004	0.100***	0.088***	0.246***	1.000											13.05	5.19	0.00	37.00
7	Distance Covered	0.066***	-0.007	-0.078***	0.028	0.022	0.028	1.000										115.46	6.46	0.00	129.65
8	Played Passes	0.124***	-0.001	0.034*	-0.002	0.081***	0.398***	0.043**	1.000									447.18	128.62	135.00	1078.00
9	Successful Passes	0.129***	-0.005	0.054***	0.002	0.081***	0.406***	0.040*	0.990***	1.000								346.75	132.17	68.00	1004.00
10	Missed Passes	-0.061***	0.030	-0.146***	-0.029	-0.015	-0.127***	0.008	-0.116***	-0.256***	1.000							100.43	19.01	45.00	186.00
11	Possession	0.104***	0.000	0.000	0.000	0.098***	0.480***	-0.070***	0.888***	0.859***	0.037*	1.000						0.50	0.12	0.16	0.84
12	Won Duels	0.174***	0.000	0.000	0.000	0.133***	0.246***	-0.045**	0.218***	0.209***	0.023	0.241***	1.000					0.50	0.05	0.29	0.71
13	Fouls Committed	-0.049**	-0.034*	-0.086***	-0.014	-0.090***	-0.138***	-0.080***	-0.292***	-0.314***	0.210***	-0.116***	-0.264***	1.000				14.23	4.37	1.00	30.00
14	Fouls Suffered	0.045**	-0.032	-0.089***	-0.016	0.080***	0.038*	-0.108***	-0.081***	-0.112***	0.227***	0.118***	0.273***	0.258***	1.000			13.61	4.30	1.00	30.00
15	Offsite	0.008	0.007	0.003	0.030	0.063***	-0.006	0.000	-0.017	-0.026	0.066**	-0.006	0.067***	0.011	0.051**	1.000		2.29	1.76	0.00	11.00
16	Corners	0.081***	0.008	-0.003	-0.003	0.159***	0.529***	-0.012	0.288***	0.287***	-0.046***	0.405***	0.106***	-0.083***	0.002	-0.005	1.000	4.82	2.73	0.00	18.00

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$; SD = Standard Deviation

Table 2.2 Descriptive Statistics: Means, Standard Deviations, and Correlation.

	M1	M2
Left Fullback	0.12450*** (0.00059)	0.11942*** (0.00072)
Right Fullback	0.11314*** (0.00063)	0.11050*** (0.00076)
Coach	0.09524*** (0.00056)	0.09950*** (0.00067)
Goalkeeper	0.08646*** (0.00052)	0.08831*** (0.00058)
Offensive Left Midfielder	0.07420*** (0.00051)	0.08060*** (0.0006)
Left Centre Back	0.06708* (0.00053)	0.06412*** (0.00054)
Offensive Right Midfielder	0.06544*** (0.00050)	0.06855*** (0.00063)
Offensive Centre Midfielder	0.05973 (0.00049)	0.05827 (0.00059)
Right Centre Back	0.05971*** (0.00047)	0.05563*** (0.00055)
Centre Forward	0.0543*** (0.00046)	0.05714* (0.00053)
Centre Back	0.04021 (0.00034)	0.04697*** (0.00040)
Right Centre Midfielder	0.04001*** (0.00042)	0.03572*** (0.00051)
Left Centre Midfielder	0.02827*** (0.00041)	0.01913 (0.00050)
Left Midfielder	0.02404*** (0.00022)	0.01950 (0.00024)
Left Centre Forward	0.02238*** (0.00031)	0.02167*** (0.00035)
Right Midfielder	0.01251*** (0.00023)	0.01877*** (0.00024)
Left Offensive Centre Midfielder	0.0108*** (0.00025)	0.01148*** (0.00029)
Right Offensive Fullback	0.00739*** (0.00013)	0.00866*** (0.00016)
Left Offensive Fullback	0.00673*** (0.00015)	0.00757*** (0.00015)
Centre Midfielder	0.00241 (0.00012)	0.00242 (0.00013)
Defensive Centre Midfielder	0.00239*** (0.00013)	0.00230*** (0.00012)
Left Winger	0.00120*** (0.00005)	0.00178*** (0.00007)
Right Winger	0.00075*** (0.00004)	0.00092*** (0.00005)
Right Centre Forward	0.00055*** (0.00003)	0.00044 (0.00002)
Right Offensive Centre Midfielder	0.00037***	0.00040***

	(0.00002)	(0.00002)
Left Defensive Centre Midfielder	0.00008	0.00011
	(0.00000)	(0.00001)
Right Defensive Centre Midfielder	0.00008	0.00011
	(0.00000)	(0.00001)
Matches	1,836	1,836
Overall net variable contribution	0.08	0.09

Notes: Standard errors in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2.3 Results from Random Forest Regression of Individual Position’s Contributions to Winning Relative to the Explanatory Power of all Positions.

The first finding regarding the importance of defensive positions overall seems surprising as offensive players and especially strikers often receive the most public attention and are the highest-paid players. Analyzing those results through the lens of resource-based theory, in which talent is human capital, that is highly valuable and unique (Lepak & Snell, 1999) could explain the pivotal positions that result from our analysis. For a position to be of higher importance than other positions, one explanation could be a lower supply-demand ratio. If there is less qualified talent available for a specific position with the same demand as another position, this position should contribute more to organizational success, as the talent is more unique. The same holds true for a constant supply, but a higher demand. Assuming that the demand would be how often a specific position has been occupied in our dataset and the supply would be by how many different players, we calculate the supply-demand ratio. The results are presented in Table 2.4 and show that the position with the lowest supply-demand ratio is the goalkeeper, followed by the two central defenders and the left and right fullbacks. This means, that relatively fewer different players, played on a specific position over the time span of our analysis. Underlying reasons could be that the required skillset to fill a position might be more specific than for other positions or that a lower number of talents are formed to fulfill this position. In both cases, the supply of qualified human capital would decrease, which would result in a higher uniqueness of the position and therefore higher importance to organizational performance.

	Demand (Occupation rate per match)	Supply (Number of different players per position)	Demand- Supply-Ratio (Supply divided by number of occupations)
Coach	100%	78	0.021
Goalkeeper	100%	83	0.023
Right Centre Back	100%	182	0.050
Left Centre Back	100%	185	0.050
Left Fullback	83%	158	0.052
Right Fullback	83%	162	0.053
Centre Forward	61%	183	0.081
Right Centre Midfielder	84%	276	0.090
Left Centre Midfielder	82%	275	0.092
Offensive Right Midfielder	72%	282	0.107
Offensive Left Midfielder	72%	290	0.110
Offensive Centre Midfielder	43%	197	0.126
Right Centre Forward	36%	196	0.150
Centre Midfielder	24%	134	0.152
Centre Back	18%	103	0.154
Left Centre Forward	36%	207	0.155
Left Offensive Centre Midfielder	26%	223	0.232
Right Offensive Centre Midfielder	26%	227	0.238
Left Midfielder	12%	110	0.248
Right Midfielder	12%	113	0.255
Left Offensive Fullback	6%	57	0.256
Right Offensive Fullback	6%	58	0.259
Defensive Centre Midfielder	10%	100	0.271
Left Defensive Centre Midfielder	2%	33	0.412
Left Winger	2%	38	0.521
Right Winger	2%	40	0.541
Right Defensive Centre Midfielder	1%	30	0.714

Table 2.4 Demand, Supply, and Demand-Supply-Ratio for all Positions.

Regarding our second finding, that positions on the left of the field are generally more important than their counterparts on the right side of the field, we can find arguments supporting this result by applying the same logic as for the defensive-offensive differences. Positions on the left are mostly occupied by left-footed players, while positions on the right are mostly occupied by right-footed players. As almost every line-up is symmetrical between left and right, the demand for left-footed players would be roughly the same as the demand for right-footed players. As there are much fewer left-footed players than right-footed players (Bryson, Frick,

& Simmons, 2013), the talent for the positions that are mostly occupied by left-footed players becomes more unique and therefore those positions are more important to organizational performance.

Regarding the findings related to the importance of the head coach, it shows that he or she has higher importance compared to most on-field positions, which might be a result of his or her responsibilities in motivating players (Wilders, 1976), processing information, and making decisions, especially regarding line-up and substitutions during a match (Mintzberg, 1973). Additionally, our data show a relatively low demand-supply ratio (see Table 2.4), which also explains, why head coaches are highly unique talents. While one might argue that as a consequence the importance of a head coach should be even higher, our results also confirm, that despite a talent shortage and a high organizational responsibility, leaders who come up with great plans can only improve the organizational performance with the help of “people who are ‘on the field’ implementing those plans” (Groysberg et al., 2019).

2.5.2 Theoretical Implications

Our findings have interesting implications for TM literature. By identifying the supply-demand ratio as a potential driver of a position’s importance to organizational success, we show that there is an interdependency between the availability of talent to fulfill a specific position and the importance of this position to organizational success. In our opinion, this interdependency is not sufficiently reflected in the most used definition of TM from Collings and Mellahi (2009), where the identification of key positions, the identification of high potentials to fill these roles, and ensuring the talents’ commitment to the organization are formulated in a rather sequential way with identification of key positions as the first step. This also leads to the identification of key positions seen as starting point of any TM consideration by many scholars (e.g., Cascio & Boudreau, 2016; Collings et al., 2017).

To incorporate the importance of a potential shortage of available talent in the identification of key positions, we propose to slightly adopt the widely used definition of TM into “activities and processes that involve the systematic identification of key positions which differentially contribute to the organization’s sustainable competitive advantage [or face a shortage of available talent], the development of a talent pool of high potential and high performing incumbents to fill these roles, and the development of a differentiated human resource architecture to facilitate filling these positions with competent incumbents and to ensure their continued commitment to the organization” (Collings & Mellahi, 2009, p. 304).

2.5.3 Practical Implications

Our results have several implications for managers in football in particular but also offer conclusions and ideas for other industries.

2.5.3.1 Practical Implications for TM in Professional Sports

Our results have one implication across different sports and three key implications for managers of professional football organizations.

Our results highlight the importance and the possibility to identify pivotal roles for organizational success in professional football. A similar approach can be applied to many other team sports. Groysberg et al. (2019) used the same approach to identify which leader (Quarterback, head coach, general manager, owner) matters most for organizational success in American Football, but there are many team sports such as basketball, ice hockey, or volleyball where managers could generate valuable insights by performing similar analysis. Like in other businesses as well, managers of sports organizations should know the pivotal positions of a team and not follow conventional wisdom.

This holds true for professional football, where our findings suggest, that the conventional wisdom that offensive players are the most important players to success, which results in the highest pay grades for offensive players (Forbes, 2020), should be challenged and

defenders should be paid according to their contribution to organizational success. The second and third key implications for managers of professional football clubs are grounded in the importance of left-sided positions, which are mostly occupied by left-footed players. Therefore, managers should concentrate on the search and development of these left-footed players. In this way, they generate higher-quality human capital and therefore produce economic value for their clubs. A second approach could be to overcome the talent shortage by focusing on the development of two-footed players and even training right-footed players to become equally strong with both feet, which is possible as the example of the former Italian international Paolo Maldini proves (Fraser, 2007).

2.5.3.2 Practical Implications for TM in other Industries

Our results highlight the importance of positions, for which the supply of top talent is sparse, like left-footed players. By consciously acquiring and developing the best talent from a small talent pool, football clubs can win a substantial advantage over competitors. Similarly, the recruiting and development of specialists within an organization can be an important lever to be ahead of the curve. Therefore, each organization needs to identify roles, for which having the best talent is critical by taking the talent supply into account and then managing the talent acquisition and development process accordingly.

Additionally, our results highlight the importance of acquiring or developing talents on non-managerial levels, as they can occupy roles that might be more crucial to the organizational performance than the position of the responsible manager similar to fullbacks and their head coaches in professional football.

Finally, our results highlight the importance of continuously challenging conventional wisdom by using the available methods of data analysis and potentially generating new insights that might offer a competitive advantage.

2.5.4 Limitations and Directions for Future Research

Our research is not without limitations. Due to the complexity of the applied method of analysis, and the high number of potential positions, our data set covers only six years, which is a relatively small time span compared to a similar analysis in American Football, which covers 38 years. Additionally, our results are based on data from the German Bundesliga only. While the theory that we applied would not suggest different results in other countries and leagues, performing a similar analysis for other leagues could strengthen theoretical foundations and generate further learnings.

As described in the previous section, our approach is not limited to professional football and could be applied to many other team sports, where players are either changing positions or teams and it could also be applied outside of sports to identify pivotal positions in organizations.

3 Paper II: Measuring Outcomes of Talent Management – Evidence of Value Generation through Talent Management in Professional Football³

3.1 Introduction

Though it first appeared in management roughly two decades ago, Talent Management (TM) has become one of the fastest-growing topics in the field of management in recent years (Collings et al., 2015). It is a highly debated topic in the academic literature (e.g., Beamond et al., 2020; Cappelli & Keller, 2017; Cascio & Boudreau, 2016; Collings et al., 2017, 2015; De Boeck et al., 2018; Kravariti & Johnston, 2020; McDonnell et al., 2017) and it is also of high value for practitioners. After a range of special issues (Collings, Scullion, & Vaiman, 2011; Gallardo-Gallardo et al., 2020; McDonnell, Collings, & Burgess, 2010; e.g., Scullion, Collings, & Caligiuri, 2010) and reviews to assess the maturity of the field (e.g., Gallardo-Gallardo et al., 2015; Schuler, Mellahi, McDonnell, & Collings, 2017; Thunnissen et al., 2013; Thunnissen & Gallardo-Gallardo, 2019), there are many open questions and directions for future research as “there is little knowledge about how talent management is conceived, implemented and developed within organizations, not to mention about its outcomes and effectiveness” (Gallardo-Gallardo et al., 2020, p. 2). Especially the missing link between TM and organizational performance (Collings et al., 2019) is a key challenge in the field (e.g., Saridakis et al., 2017) as it is needed to support the mainly implicit claims that TM is a source of Strategic Competitive Advantage and value creation (e.g., Barney, 1991; Cascio & Boudreau, 2016; Lepak & Snell, 1999; Sparrow et al., 2014). Therefore, one core challenge to develop further

³ Krüger, H., Schmidt, S. L. (2022). Measuring Outcomes of Talent Management – Evidence of Value Generation through Talent Management in Professional Football. Unpublished Working Paper.

for the TM field is to answer about value (Sparrow & Makram, 2015). Thus, we seek to empirically identify sources and antecedents of value creation through TM.

As measuring the outcomes of TM is a key issue in organizations across industries, we seek to advance the field by examining the value creation through TM across the top four professional football leagues in the world, the English Premier League, LaLiga in Spain, Serie A in Italy and Bundesliga in Germany. Applying the definition of talent as “those individuals who can make the greatest difference to organizational performance, either through their immediate contribution or in the longer term by demonstrating the highest levels of potential” (Tansley & Tietze, 2013, p. 1800) to professional football, we investigate value creation through TM, focusing on the players as key individuals of a football club. Professional sports and football, in particular, are well set up to investigate value creation from TM and offer some important advantages over research settings in other industries. First, while it is usually difficult for TM scholars to identify pivotal talents (Sparrow et al., 2014), there is much clarity in professional football on the importance of key talent – the players – and their impact on organizational performance (Merkel et al., 2021). Second, in professional football clubs, there is partial public transparency on TM architecture; for example, the size of the talent pool and a club’s talent acquisition and retention strategy (van Ours & van Tuijl, 2016) are often known. The third advantage, compared to other industries, is that a player released from one organization and acquired by another is often accompanied by a transfer fee paid by the acquiring to the releasing organization. The result of this system is that players have a market value, which is continuously assessed. These values are regularly updated and an established data source in academic research (e.g., Peeters, 2018; Prockl & Frick, 2018; Serna Rodriguez et al., 2019). The availability of this data can help scholars to overcome the challenge of evaluating and measuring outcomes of TM (Cappelli & Keller, 2014; e.g., Langenegger et al., 2011).

Following the definition from Collings and Mellahi (2009, p. 304), which is the most established definition of TM (Thunnissen & Gallardo-Gallardo, 2019), as “activities and processes that involve the systematic identification of key positions which differentially contribute to the organization’s sustainable competitive advantage, the development of a talent pool of high potential and high performing incumbents to fill these roles, and the development of a differentiated human resource architecture to facilitate filling these positions with competent incumbents and to ensure their continued commitment to the organization”, our approach allows us to assess value creation through TM for the key stages of TM: identification and acquisition of talent, talent development, and talent retention or release (Schiemann, 2014).

To measure and compare the value generation of different organizations, identify the first set of antecedents, and develop a structure for future research, we use structure from the financial literature on value creation through asset portfolio management. Talents are often seen as strategic assets by management scholars (e.g., Gallardo-Gallardo et al., 2015; Odiorne, 1984; Sparrow, 2019; Thunnissen et al., 2013) and one of the managerial key tasks is asset orchestration (Helfat et al., 2007). Since empirical research in the field of value creation through asset portfolio management (e.g., mutual funds, venture capital funds) is already more advanced than value creation research through TM and some drivers of performance are identified, we investigate a subset of these drivers for our analysis.

There are two types of variables whose impact on fund performance are investigated by finance scholars: management variables and managerial characteristics. Management variables such as asset turnover (e.g., Carhart, 1997; Pástor, Stambaugh, & Taylor, 2017; Prather et al., 2004), number of assets held in a portfolio (e.g., Coval & Moskowitz, 2001; Pool, Stoffman, & Yonker, 2012; Prather et al., 2004) or portfolio value (e.g., Christoffersen & Sarkissian, 2009; Cremers & Petajisto, 2009; Lan, Moneta, & Wermers, 2016; Pool et al., 2012; Prather et al., 2004; Wermers, 1999) are linked to a manager’s investment style. Managerial characteristics

are linked to the manager who is responsible for the portfolio itself. In this field, finance scholars have mostly investigated managerial human capital (e.g., Baer et al., 2009; Chevalier & Ellison, 1999; Chuprinin & Sosyura, 2018; Patel & Sarkissian, 2017; Prather et al., 2004) and managerial social capital (e.g., Cici et al., 2017; L. Cohen et al., 2008; Massa & Rehman, 2008). In our paper, we primarily address management variables by investigating whether talent turnover—in addition to the number and age of talent in an organization’s talent pool—impacts value creation as one outcome of TM.

Analyzing value creation before expenses, we find that more talent turnover leads to increased value generation. In contrast, a larger talent pool results in lower value generation. This finding is particularly interesting as it highlights the importance of releasing talent and capturing their value (Sparrow & Makram, 2015) before they leave an organization. We find that the size of the talent pool has a significant impact on value generation in the talent development phase, while turnover impacts value generation across the acquisition, development, and retention or release phase (Schiemann, 2014) of TM. Additionally, we find that organizations with younger talent generate more value than organizations with older talent.

3.2 Theory and Hypotheses

Over the last 20 years, the literature on TM has developed rapidly and in many different directions. In recent years, several literature reviews (e.g., Gallardo-Gallardo et al., 2015; Schuler et al., 2017; Thunnissen et al., 2013; Thunnissen & Gallardo-Gallardo, 2019) assessed the maturity of the field and tried to identify the key themes that evolved from the literature. According to Thunnissen et al. (2013), three themes have emerged: (1) definition of talent and TM, (2) outcomes of TM, and (3) TM practices; we will discuss these themes in the following paragraphs.

3.2.1 Definition of Talent and Talent Management

TM is a relatively young discipline of management research, which emerged within the frame of the “war for talent” (Chambers et al., 1998). There is a lot of research related to the definition of TM and to the definition of talent itself. While this was “one of the core debates in the 2000s as the field emerged” (Thunnissen & Gallardo-Gallardo, 2019, p. 175), fewer scholars include a clear definition of TM and talent itself in their more recent work, a shortcoming of some of the recently published works (Thunnissen & Gallardo-Gallardo, 2019).

Cappelli (2008, p. 1) was amongst the first scholars to define TM as “the process through which employers anticipate and meet their needs for human capital.” The most common definition of TM amongst scholars goes back to Collings and Mellahi (Thunnissen & Gallardo-Gallardo, 2019) who defined TM as “activities and processes that involve the systematic identification of key positions which differentially contribute to the organization’s sustainable competitive advantage, the development of a talent pool of high potential and high performing incumbents to fill these roles, and the development of a differentiated human resource architecture to facilitate filling these positions with competent incumbents and to ensure their continued commitment to the organization” (Collings & Mellahi, 2009, p. 304). In the literature, there are also different definitions of talent itself. Early reviews found a distinction between an object approach, where talent means characteristics of people, such as knowledge, abilities, or competencies (Thunnissen et al., 2013), and a subject approach, where the focus lies on talent as people. When focusing on organizational outcomes of TM and talent’s impact on it, most scholars follow the definition of talent as “those individuals who can make the greatest difference to organizational performance, either through their immediate contribution or in the longer term by demonstrating the highest levels of potential” (Tansley & Tietze, 2013, p. 1800). In this paper, we follow the definitions of Collings and Mellahi (2009) for TM and Tansley and Tietze (2013) for talent. Following these definitions, we apply the lens of the

resource-based view (RBV) (Barney, 1991), the most used theoretical framework in the TM literature (Thunnissen et al., 2013). The RBV describes talent as human capital that is highly valuable and unique (Lepak & Snell, 1999); assets that are pivotal to an organization's core business and difficult to replace or copy by competitors.

3.2.2 Outcomes of Talent Management on the Individual Level

Research on individual outcomes of TM does mainly investigate the effect of talent status and its effect on the non-talent status of the respective individuals. From a theoretical perspective building on social exchange (Blau, 2017) and psychological contract perspective (Rousseau, 1995), talent designation promises a preferential treatment that talents pay back with additional effort and commitment (De Boeck et al., 2018). Receiving talent status signals appreciation of past work and trust in an employee's potential for further development triggers the Pygmalion effect (Eden, 1984, 1992) and results in increasing individual performance due to increased self-efficacy. But the status can also come with negative reactions, such as self-satisfaction (Ehrnrooth et al., 2018), behaviors harmful to coworkers to counterbalance threats to status (Jensen, Patel, & Raver, 2014), or risk of work overload due to supervisors' overreliance (Park, Chae, & Kim, 2017). There is empirical evidence for both, positive (e.g., Björkman, Ehrnrooth, Mäkelä, Smale, & Sumelius, 2013; Dries & De Gieter, 2014; Dries, Van Acker, & Verbruggen, 2012; Gelens, Dries, Hofmans, & Pepermans, 2015; Gelens, Hofmans, Dries, & Pepermans, 2014; Khoreva & Vaiman, 2015; Malik, Singh, & Chan, 2017; Seopa, Wöcke, & Leeds, 2015; Swailes & Blackburn, 2016) and negative (e.g., Dries & De Gieter, 2014; Dries & Pepermans, 2007; Thunnissen, 2016) outcomes of designation of talent status.

In addition to the effect of receiving talent status or not, there is a small body of research that investigates the effects of organizational TM practices and leadership development practices on individual outcomes, such as an increase in commitment to the organization and

intention to stay (Chami-Malaeb & Garavan, 2013), an increase in the commitment to develop competencies (Höglund, 2012; Khoreva, Vaiman, & Van Zalk, 2017).

On the other hand, the individual effects of TM on employees with non-talent status are rather negative (Cappelli & Keller, 2014). From a social exchange perspective, the non-talent status can result in retaliation against employees with talent status (Jensen et al., 2014) or against the employer (Hanisch & Hulin, 1990). From a motivational perspective exclusion from the talent pool triggers the Golem effect (Eden, 1984) resulting in lower self-efficacy and consequently lower performance.

Thus, as the effect of TM on the individual level is inconclusive (De Boeck et al., 2018), the impact of individual-level outcomes on organizational outcomes is uncertain (Krebs & Wehner, 2021).

3.2.3 Outcomes of Talent Management on the Organizational Level

As repeatedly documented in reviews, the link between TM and organizational performance is weak (e.g., Collings, 2014; Collings et al., 2015; Gallardo-Gallardo & Thunnissen, 2016; McDonnell & Collings, 2017). While not distinguishing between talent and non-talent status Mabey and Ramirez (2005) find that the way management development is conceived and implemented contributes significantly to superior firm performance. It does also increase human and social capital (Subramony, Segers, Chadwick, & Shyamsunder, 2018). Lehmberg et al. (2009) found that firms that appointed ex-GE executives as CEOs received a larger increase in stock price than other firms and reasoned that these ex-GE executives built up more managerial capabilities during their time at GE due to their extensive TM program than their counterparts from other companies. Latukha and Veselova (2019) found a positive effect of a firm's ability to predict talent demand and practices to develop talent pools to their perceived financial performance relative to the industry average or main competitors. Regarding career development practices, Glaister et. al (2018) found that TM aiming to develop

workforce networks and social capital is a key mechanism to transmit human resource management practices into firm performance. Last but not least, Son et. al (2020) found that TM practices increased innovation but also turnover rates, especially when investments in human resource management were high.

3.2.4 Talent Management and the Theory of Value

Building on the theory of value creation (Lepak, Smith, & Taylor, 2007), the RBV perspective (Barney, 1991), and the Dynamic Capabilities (DCs) perspective (Eisenhardt & Martin, 2000; Teece et al., 1997), Sparrow and Makram (2015) define a framework for value generation through TM. It is based on four value-driven processes: value creation, value capture, value leverage, and value protection.

Lepak et al. (2007) suggest three sources of value creation. Relating to TM, two of them can be identified as sources of value creation: the individual talent, which develops in its role and provides additional benefit for the employer and the organization by inventing new TM practices, systems, and processes to exploit their employee's potential. Sparrow and Makram (2015, p. 250) define value creation as "the process through which the organization attracts, acquires and accumulates valuable and unique talent resources and exploits their potential to create value". Value capture is the process of the employer benefitting from the value created by and with the employee. Scholars argue that it is "a function of a bargaining process" (Bowman & Swart, 2007, p. 492) between the two parties. Therefore Sparrow and Makram (2015, p. 250) define value capture as "the process through which an organization then bundles its talent resources with other resources to increase their dependency on the organization context, and hence weaken their bargaining power". Building on DCs literature (Eisenhardt & Martin, 2000; Teece et al., 1997), which suggests that firms can leverage the value of their intangible, tangible, and human resources by engaging in activities that create, modify, and extend their resource base (Helfat et al., 2007), value leverage from TM is the incremental use-

value created by the organization through the development of the captured capabilities of their talents (Sparrow & Makram, 2015). Last but not least, firms can only protect value if they proceed to capture their resources that create value (Rumelt, 1984), especially by preventing rivals from having access to value-creating resources or by developing a skill base that is company-specific (Mitchell, 2008).

3.2.5 The Theory of Value for Talent Management and Professional Football

The theory of value for TM and its four key processes value creation, value capture, value leverage, and value protection can be applied to TM in professional football. Focusing on the first-team players as the key talent of the sports department, value creation as defined by Sparrow and Makram (2015) can occur with the acquisition of talent. If a club manages to acquire a player whose value exceeds the acquisition costs, value can be created directly with the acquisition. Once the player is with the club the process of value leverage becomes the primary source of organizational value creation as the player extends his capabilities in training and matches, gains experience, and combines and extends his individual skills with tacit organizational knowledge, in this case especially the knowledge of the head coach and capabilities of other players. The process of value protection in professional football differs from other industries, as there is an inherent isolating mechanism that protects from talent loss to competitors. Talents are not free to move to other organizations in case their contracts did not terminate, but rather need the approval of their current organization. Often, this approval is provided only if the acquiring club agrees to pay a transfer fee that meets the releasing club's expectations of the talent's value, which is then the process where the value that has been created, leveraged, and protected, is finally captured for the organization. In case a club fails to protect the value of talent, which means that a player runs out of contract and moves to another club, there is no value captured as players are allowed to move on a free transfer in this case since the Bosman Ruling (Simmons, 1997).

3.2.6 Impact of Turnover, Talent Pool Size, and Maturity on Organizational Value Creation

In our analysis, we investigate the impact of three variables that reflect some aspects of a TM architecture on organization value creation: talent turnover, talent pool size, and the average age of the talents in the talent pool. We focus on these variables as talent is often described as a strategic asset by management scholars (e.g., Gallardo-Gallardo et al., 2015; Odiome, 1984; Sparrow, 2019; Thunnissen et al., 2013) and in the more advanced research field of asset portfolio management, these variables are amongst the most important when investigating the impact of management variables on the performance of asset portfolio management (e.g., for mutual funds, venture capital funds).

3.2.6.1 Turnover

When it comes to value creation through TM, Sparrow and Makram (2015) describe that value can be created when organizations achieve to increase the use-value of acquired talent by uniquely positioning them in a social network, benefitting from their relationship with others, combining individual skills with tacit organizational knowledge, or using their creativity to create new tasks, services, or business models. From an organizational perspective, value can be created by bundling “resources together in ways that build new capabilities” (Sparrow & Makram, 2015, p. 256).

While talent retention is a key objective of most TM programs (Collings & Mellahi, 2009) and is considered one of the critical activities of TM (Thunnissen & Gallardo-Gallardo, 2019) this view also raises concerns about the gap between research and practice, as organizations would sometimes let poor performers go even if they are part of the talent pool and therefore include other high-performers, which initially were not (Sharma, 2021). There are only a few scholars that discuss the benefits of talent turnover. Talent turnover is a way for organizations to respond to changes in the environment within which organizations are

operating (Wright, Dunford, & Snell, 2001). A moderate level of turnover can be beneficial for organizations as it creates an inflow of new and diverse knowledge and attitudes (Lazarova & Taylor, 2009) and allows for releasing poor performers and importing “fresh talent and ideas” (Aghina, de Jong, & Simon, 2011, p. 5). Inkpen, Minbaeva, and Tsang (2019) argue that the cost of talent retention can become too high and turnover, on the other hand, allows for the acquisition of new talent, which could bring beneficial knowledge from former employers. Somaya and Williamson (2011) argue that maintaining a good relationship with departing talent could help an organization improve its social capital and to benefit from a potential client and human capital access as well as goodwill.

Applying the theory of value for TM (Sparrow & Makram, 2015) and its four key processes to professional football, we argue that regarding value creation, value protection, and value capture, turnover does not impact the abnormal value creation, as these three processes and turnover are normally linked to two organizations, the player acquiring organization and the player releasing organization⁴. Therefore, even if one club manages to create value with the acquisition i.e. by paying a lower transfer fee than the market value of the player, the releasing club did not manage to capture this value and has therefore reduced organizational value from the talent. As over the two clubs, this equals zero, turnover should not impact abnormal organizational value creation through value creation, value protection, and value capture. Regarding value leverage as the fourth process in the theory of value, turnover leads to a change in the composition of the talent pool and new incumbents bring can bring new skills that might help other talents to amplify their value but probably more important they can extend their

⁴ There are only two events of turnover that do not include two organizations. If a player, who was developed in a club’s youth center is integrated in the first team, there is no releasing club and if a player leaves a club at the end of his career or without having found a next employer, there is no acquirer. In those cases, the value of players is rather low compared to other moments in their professional career, which is why we neglect it in our argumentation.

capabilities with tacit organizational knowledge, especially from working with a new head coach that might have other capabilities than their previous head coaches. New training methods and skills provided by the head coach have a rather fast impact and will be strongest for the first time after the arrival of a new player. At the organizational level as well, combining acquired players with the veteran or other acquired players will have the biggest impact in the first year, when all teammates are new to the acquired player. Therefore in the first seasons after an acquisition, the potential to build new capabilities as a team is highest. Adding this mechanism to the argumentation regarding turnover and value creation, value protection, and value capture, we derive that more turnover will lead to increased value generation.

***Hypothesis (H1).** A higher talent turnover leads to an increase in abnormal organizational value generation through TM in professional football.*

3.2.6.2 Talent Pool Size

Due to the difficulty of measuring outcomes of TM and collecting meaningful data across different companies, no available research explores how talent pool size influences organizational outcomes.

The available talent pool research investigates how an individual performance, feelings, and attitudes depend on the inclusion or exclusion from the talent pool. With theoretic foundations in psychology and the Pygmalion effect (Eden, 1984, 1992), individuals that are comprised in a talent pool are expected to feel better and perform better than if they were not. This is the result of receiving better leadership and, consequently, developing higher self-expectations, which act as a driving force (Eden, 1984) to talent pool inclusion. In line with this theory, i.e. Björkman, et. al (2013) found that employees that are part of the company's talent pool are more likely to have positive attitudes. Still, differential treatment can also result in a negative effect on employees that are not part of a company's talent pool, which can result in, i.e., a stronger feeling of unfairness and lower perceived support (Swales & Blackburn, 2016).

Applying the theory of value for TM (Sparrow & Makram, 2015) and its four key processes to professional football, we argue that the strongest link between abnormal organizational value creation and the size of the talent pool should result from value leverage. Many scholars who investigated player performance (e.g., Barros, 2001; Gerrard, 2001; Serna Rodriguez et al., 2019) identified playing time throughout a season as one key driver for a player's development and gain in experience and thus value leverage (Sparrow & Makram, 2015). With only a fixed amount of playing time throughout a season available, a talent pool comprised of more talent who share this playing time would lead to a lower average playing time per player and consequently result in lower average value leverage. Regarding value creation, protection, and leverage, an increase in the size of the talent pool will result in a decrease in managerial attention towards these processes, as it has to be shared between more talents. Consequently, we argue that a smaller talent pool results in an increase in organizational value generation from TM.

***Hypothesis (H2).** A larger talent pool results in a decrease in abnormal organizational value generation through TM in professional football.*

3.2.6.3 Maturity of Talent in the Talent Pool

Similar to the talent pool size, no existing research investigates the impact of the age of the employees in the talent pool on outcomes of TM and value generation specifically. In a single-company case study, Swailes and Blackburn (2016) observed that the talent pool comprised younger employees, which had, on average, less tenure than the employees outside of the talent pool. Conceptually some scholars argue that companies aiming to hire external talent should search for young talent with less tenure, as they are more likely to move and can create more value as they could have more transferrable human capital than employees with a higher tenure (Morris, Oldroyd, & Bahr, 2021).

In professional football, many scholars have investigated the relationship between age and a talent's value. Kuethe and Motamed (2010) use salary as the independent variable and find a u-shaped relationship. However, several other scholars identify an inverted u-shaped relationship between value and age (e.g., Bryson et al., 2013; Deutscher & Büschemann, 2016; Drut & Duhautois, 2017; Gerrard, 2001; Lucifora & Simmons, 2003; Serna Rodriguez et al., 2019). Applying the theory of value for TM (Sparrow & Makram, 2015), we focus again on the process of value leverage. As this process reflects the change of the value and therefore, the first derivative of the age-value relationship. Assuming an inverted u-shaped relationship between value and age, as described above, we then expect a linear relationship between talent pool age and abnormal organizational value generation with a higher age leading to less value generation, which is in line with the scarce empirical and conceptual research outside of football.

***Hypothesis (H3).** A higher average age of talent in the talent pool results in a decrease in abnormal organization value generation through TM in professional football.*

3.3 Methods

3.3.1 Data and Sample

To test our hypotheses, we used data from the top four football leagues in the world—the English Premier League, LaLiga in Spain, Serie A in Italy, and Bundesliga in Germany—beginning with the 2014/2015 season and ending with the beginning of the 2019/2020 season. As none of these leagues follows a franchise system, there are two to three clubs that are relegated to and promoted from the second league at the end of each season. As a consequence, there is a fluctuation in teams that play in the highest leagues. Football clubs that do not play in the highest domestic league for more than one season often face increased pressure to return

to the highest domestic league. Therefore, they often encounter high financial pressure (de Dios Tena & Forrest, 2007) and face pressure to change their approach to TM and value creation. As commonalities such as sharing the same environment and high comparability of the organizations are essential to systematically compare organizations within industries (Mahoney, 1995; Peteraf & Barney, 2003), we limit our dataset to the clubs that were in the highest domestic league for the 2019/2020 season and either missed fewer than two of the five previous seasons in the highest domestic league or were among the 50 teams with the highest valued talents at the beginning of the 2019/2020 season. We excluded the years where teams did not play in the highest domestic league from the data panel. Consequently, our panel consists of 59 clubs with a total of 282 observations.

To assess the value created through TM of these clubs, we created a unique dataset by systematically collecting the market value of each player of each club for each season of our dataset. We generated the input for these data from the online football data platform [transfermarkt.de](https://www.transfermarkt.de), an established data source for football-related research (e.g., Matesanz et al., 2018; Peeters, 2018; Prockl & Frick, 2018; Schreyer, 2019; Serna Rodriguez et al., 2019). We enriched these data with all player acquisition and player releases and the related fee that the acquiring organization paid to the releasing organization. We also used [transfermarkt.de](https://www.transfermarkt.de) to generate data for the operationalization of independent variables and controls.

Our period of analysis is one year, starting at the end of the summer transfer period, which is in the first weeks of a season until the end of the summer transfer period of the following season. We choose this time frame for the analysis because most changes to the talent portfolio occur in the summer transfer period and much fewer occur in the second transfer period in January; the talent pool is then stable for the majority of the analysis period. Talent can be developed for up to ten months of the period. The capture of created value, an important

step in value generation through TM (Sparrow & Makram, 2015) occurs mostly during the summer transfer period.

3.3.2 Measures

3.3.2.1 Dependent Variables.

For a professional football club, there are three components to value creation (VC) before expenses through TM, value creation via trading (VCT), value creation via development (VCD), and value creation via youth players (VCY) in a time period t:

$$VC_t = VCT_t + VCD_t + VCY_t$$

VCT is related to the acquisition and release of players and is a result of market anomalies and different use-value of a player for various clubs, similar to synergies and resulting acquisition premiums for company acquisitions. VCT is the sum of value creation via player acquisitions (VCA) and value generation via player releases (VCR). VCA is the sum of the difference between the market value (MV) and the acquisition fee (F) of the acquired players over the period t, and VCR is the sum of the difference between the acquisition fee and the market value of the released players over the period t. This results in the following formulas for calculation:

$$VCT_t = VCA_t + VCR_t$$

$$VCA_t = \sum_{\forall i \in \text{Acquired players}} MV_{i,t} - F_{i,t}$$

$$VCR_t = \sum_{\forall i \in \text{Released players}} F_{i,t} - MV_{i,t}$$

VCD is the result of the development of players in the portfolio during a season. The player portfolio consists of the players that are part of the first team excluding players on loan from other clubs as they are not on a permanent contract with the respective club. With similar logic, the portfolio includes players that are on loan to other clubs as they have a permanent

contract with the respective club. VCD is the difference in the portfolio values between two seasons including only players that were part of the player portfolio at the end of the previous period (P_{t-1}):

$$VCD_t = \sum_{\forall i \in P_{t-1}} MV_{i,t} - MV_{i,t-1}$$

VCY is the sum of the market values of former youth players (Y) that have been integrated into the first team player portfolio. Because most youth players do not manage to become part of the senior team (Lenz et al., 2020) and market values are not consistently assessed for youth teams, we decided not to include youth teams in the analysis. Instead, we add the value of former youth players to the value creation via TM, once the value of former youth players is captured by including them in the first team.

$$VCY_t = \sum_{\forall i \in Y} MV_{i,t}$$

Following best practices from finance scholars for performance analysis, we determine the Alpha of a club c by calculating the relative value creation (RVC) of a club, which is the value creation per portfolio value. We then subtract the average relative value creation of all clubs for the period to calculate the abnormal value creation.

$$RVC_t = \frac{VC_t}{\sum_{\forall i \in P_t} MV_{i,t}}$$

$$Abnormal\ Value\ Creation_{t,c} = \alpha = RVC_{t,c} - \frac{\sum_{\forall j \in C} VC_{j,t}}{\sum_{\forall j \in C} \sum_{\forall i \in P_{t,j}} MV_{i,t}}$$

3.3.2.2 Independent Variables

Turnover. For the operationalization of a club's player portfolio turnover, we follow the turnover definition that is used by finance scholars (e.g., Pástor et al., 2017). As the period of analysis starts directly after changes to the talent portfolio have been made, the turnover that we use for the regressions is the turnover at the end of the previous period $t-1$:

$$Turnover_{t-1} = \frac{\min(\sum_{vi \in Acquired\ players} MV_{i,t-1}, \sum_{vi \in Released\ players} MV_{i,t-1})}{\sum_{vi \in P_{t-1}} MV_{i,t-1}}$$

Size. For the operationalization of the talent pool size, we count the number of players that are part of the player portfolio. In line with the calculations for value creation, players that are on loan to other clubs are counted, while players on loan from other clubs are not counted.

Age. To operationalize age, we calculated the average age of talent comprised in the talent pool at the beginning of a period using their age in completed years since their day of birth.

3.3.2.3 Controls

To control for characteristics of the organizations and properly account for the specific context of our study (Gallardo-Gallardo et al., 2020) in professional football, we include several football-specific variables.

As organizational characteristics, we include a dummy for the league in which the organization is playing as some countries might have systematic advantages in acquiring, integrating, and developing top talents (e.g., language). We control for the transfer balance in the current and the previous period, as, i.e., a highly positive transfer balance during the last period could influence a club's acquisition and risk-taking behavior.

Learning from finance research, we include some other control variables that are critical to the analysis of the performance of mutual funds and venture capital funds. We include the value of the talent pool, which is comparable to the value of a fund and operationalized as the sum of the market values of all players that are part of the talent pool; we use the same logic for the inclusion/exclusion of players on loan to/from other clubs as for the calculation of value creation. Following finance researchers that include portfolio value in their analyses (e.g., Christoffersen & Sarkissian, 2009; Cremers & Petajisto, 2009; Lan et al., 2016; Pool et al., 2012; Prather et al., 2004), we use the natural logarithm. To control for tradition and age of the

organization, which is comparable to the test for fund age in finance research (e.g., Christoffersen & Sarkissian, 2009; Lan et al., 2016; Webster, 2002), we include the number of years since the club foundation, the number of years since its first year in the highest domestic league, and the number of consecutive years in the highest domestic league in our model. We also include the average stadium attendance, comparable to the size of the city in which a fund is located (Christoffersen & Sarkissian, 2009), which could result in a greater attractiveness of a club for talents. We also control for changes made to the head coach, the most powerful talent manager of a club, which could influence the talent development and the resulting value creation.

Specific to the football context, we include controls for sportive performance, overperformance, players on loan to other clubs, goals, possession, and mental strength. We calculate sportive performance as the number of points won by a club in its respective league in a period divided by the number of available points; in this way, we account for the different number of matches in the various leagues. We model overperformance as the difference between the rank of the talent portfolio value compared to other clubs in the league and place in the final table at the end of the season. Presumably, overperformance should lead to adjustments in market value and, therefore, impact value creation. The number of players that are on loan to other clubs could impact the abnormal value creation as lending players to other clubs might generate additional playing time for them. For the talent pool as a whole, this would result in higher abnormal value creation.

Additionally, we control for indicators of on-field performance and playing style. While goals and shots are more obviously linked to winning, possession and fairness are an indicator of the attractiveness of playing style and could influence the market value of the players.

To control for a team's mental strength, we include the number of points won in matches where the team was behind in score during the match.

3.3.3 Estimation Method

We calculated descriptive statistics and performed bivariate analysis and panel regressions. To compare a fixed-effects model and a random-effects model, we used the Hausman test, which did not reveal a systematic difference between the two models. Consequently, we used a random-effects model with robust errors throughout our analysis.

3.4 Results

3.4.1 Descriptive Statistics and Bivariate Results

In Table 3.1, we present means, standard deviations, and correlations among the used variables. The absolute value creation through TM before expenses ranges from EUR -203.7 million to EUR +347.8 million. The span of abnormal value creation through TM, as defined in the previous section, ranges from -63% to +188%. The average turnover is 18.6%, with a wide turnover range in one period (0-75%). On average, the size of the talent pool is 40 players; on average, seven players are on loan to other clubs. The average age is 24.0 years. Abnormal value creation significantly correlates with the size and value of the talent pool, turnover, transfer balance in the current and the last season, sporting overperformance of a club compared to its talent pool's value, changes of the head coach, the age of the club, the current number of consecutive years in the highest domestic league, and stadium attendance.

3.4.2 Panel Regressions

Running the random-effects model, the variance inflation factor analysis (VIF) showed high collinearity between sportive performance and the value of the talent pool. A random-effects analysis shows that the value of the talent pool explains roughly 50% of the variation in sportive performance, measured as the share of possible points at the end of a season. Removing sportive performance from the analysis led to a mean of VIF scores of 3.85 with all values below 10, indicating no further issues of multicollinearity.

Paper II – Antecedents of Value Creation Through Talent Management

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Mean	SD	Minimum	Maximum
1	Abnormal value creation	1.00																				0.09	0.33	-0.63	1.88
2	Turnover	0.22***	1.00																			0.19	0.12	0.00	0.75
3	Size	-0.12*	0.05	1.00																		39.98	10.91	21.00	86.00
4	Age	0.01	-0.08	-0.55***	1.00																	23.96	1.01	21.61	26.75
5	League	0.04	0.08	0.16**	0.07	1.00																2.48	1.11	1.00	4.00
6	Transfer balance current period	0.28***	0.14*	-0.05	-0.01	0.00	1.00															-15.74	47.60	-198.45	91.06
7	Transfer balance last period	0.17**	0.27***	-0.12	0.01	0.06	0.20***	1.00														-14.56	44.28	-198.45	91.06
8	Value	-0.35***	-0.34***	0.27***	-0.26***	-0.01	-0.35***	-0.41***	1.00													5.07	0.87	2.48	7.08
9	Years since foundation	-0.12*	-0.05	0.09	0.14*	-0.11	-0.08	-0.07	0.22***	1.00												108.10	22.50	7.00	140.00
10	Years since first highest season	-0.03	0.09	0.33***	-0.23***	0.54***	0.06	0.14*	0.17**	0.07	1.00											50.21	31.28	0.00	90.00
11	Consecutive years in league	-0.17**	-0.23***	0.09	-0.12*	0.18**	-0.14*	-0.07	0.55***	0.11	0.40***	1.00										18.84	22.59	0.00	90.00
12	Stadium attendance	-0.21***	-0.27***	-0.10	-0.09	-0.30***	-0.31***	-0.32***	0.68***	0.15*	0.13*	0.54***	1.00									36,227.19	18,351.36	4,773.00	81,226.00
13	Head coach changes	-0.19**	0.13*	-0.06	0.04	0.13*	0.06	0.10	-0.03	-0.01	0.12*	0.05	-0.09	1.00								0.59	0.76	0.00	3.00
14	Sportive performance	0.02	-0.24***	0.21***	-0.22***	0.07	-0.26***	-0.31***	0.70***	0.04	0.23***	0.48***	0.57***	-0.29***	1.00							0.51	0.14	0.22	0.88
15	Overperformance	0.50***	0.05	-0.10	0.14*	-0.01	-0.01	0.04	-0.30***	-0.08	-0.11	-0.20***	-0.14*	-0.39***	0.25***	1.00						0.14	3.15	-9.00	11.00
16	Lend players to other clubs	-0.01	0.14*	0.77***	-0.35***	0.20***	0.01	0.06	0.04	-0.04	0.36***	0.05	-0.17**	-0.06	0.16**	-0.04	1.00					5.77	8.52	0.00	52.00
17	Goals	0.01	-0.27***	0.20***	-0.23***	0.10	-0.23***	-0.27***	0.70***	0.10	0.22***	0.52***	0.52***	-0.21***	0.87***	0.11	0.10	1.00				56.33	17.04	28.00	118.00
18	Possession	-0.10	-0.13*	0.20***	-0.19**	0.11	-0.20***	-0.20***	0.57***	0.16**	0.14*	0.41***	0.33***	-0.08	0.60***	-0.06	0.11	0.61***	1.00			0.51	0.09	0.00	0.70
19	Mental strength	0.01	-0.17**	0.21***	-0.18**	0.02	-0.14*	-0.26***	0.54***	0.05	0.18**	0.38***	0.42***	-0.18**	0.81***	0.17**	0.16**	0.76***	0.45***	1.00		0.66	0.38	0.05	2.29
20	Season	0.06	-0.01	0.03	0.01	0.00	-0.04	-0.05	0.26***	0.05	0.03	0.02	0.03	0.12*	0.01	0.02	-0.22***	0.05	0.04	0.01	1.00	2016.04	1.41	2014.00	2018.00

Notes: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; SD = Standard Deviation

Table 3.1 Descriptive Statistics: Means, Standard Deviations, and Correlations.

Rerunning the Hausman test with the reduced set of variables resulted did again not result in a significant difference between fixed-effects and the random-effects model. Table 3.2 shows the results of the random-effects model using errors robust to heteroscedasticity (White, 1980).

In Hypothesis 1, we proposed that an increase in talent pool turnover results in an increase in value creation through TM. In our analysis, we run 4 different models. In Model 1 (M1) all variables are included with the first-order terms only, in Model 2 (M2), we added a quadratic term for each of the three independent variables turnover, size, and age to test for higher-order effects. As the linear and quadratic terms for size and age showed high collinearity, we removed the quadratic terms for those two variables in model 3 (M3). In model 4 (M4), we removed all non-significant variables from M3 to test for the robustness of our results. Using M4, we find a quadratic relationship between turnover and value creation confirming our hypothesis ($p = 0.045$). An absolute increase in turnover by 5% of the average turnover would result in a total increase in value generation by 0.3%; everything else kept constant.

Regarding the impact of the size of the talent pool on value creation through TM, the results confirm our hypothesis that a bigger talent pool results in reduced value creation. We find that an additional player in the talent pool reduced the abnormal value generation by 0.8% on absolute ($p = 0.004$). Interestingly, the results also show that an additional player on loan to another club compensates for this loss as an extra player on loan to another club increases abnormal value generation by an absolute of 1.3% ($p < 0.001$).

Finally, we assumed that a greater average age of the talent pool would lead to reduced value creation as the age of football players has an inverted u-shaped relationship with the player's value (e.g., Bryson et al., 2013; Deutscher & Büschemann, 2016; Drut & Duhautois, 2017; Gerrard, 2001; Lucifora & Simmons, 2003; Serna Rodriguez et al., 2019). The regression results confirm our hypothesis and indicate a linear relationship such that greater age leads to reduced abnormal value creation ($p < 0.001$). An increase of one year in the average age of the

talent pool results in a decrease of the absolute abnormal value creation of 7.7%, which is also an economically significant amount.

	M1	M2	M3	M4
Turnover	0.318 (0.193)	-0.576 (0.410)	-0.580 (0.407)	
Size	-0.00745* (0.00309)	-0.00512 (0.0115)	-0.00795** (0.00295)	-0.00784** (0.00269)
Age	-0.0779*** (0.0162)	0.00798 (0.600)	-0.0816*** (0.0165)	-0.0772*** (0.0160)
Transfer balance current period	0.00159*** (0.000362)	0.00158*** (0.000368)	0.00157*** (0.000366)	0.00148*** (0.000344)
Transfer balance last period	-0.00000715 (0.000360)	0.0000787 (0.000369)	0.0000640 (0.000361)	
Value	-0.226*** (0.0502)	-0.218*** (0.0481)	-0.215*** (0.0482)	-0.176*** (0.0358)
Years since foundation	-0.0000666 (0.000831)	0.000146 (0.000808)	0.000198 (0.000797)	
Years since the first highest season	-0.000102 (0.000964)	-0.000330 (0.000997)	-0.000366 (0.000964)	
Consecutive years in the league	0.0000849 (0.000899)	-0.000202 (0.000878)	-0.000201 (0.000847)	
Stadium attendance	0.00000230 (0.00000174)	0.00000239 (0.00000183)	0.00000240 (0.00000177)	
Head coach changes	-0.0202 (0.0239)	-0.0224 (0.0236)	-0.0226 (0.0233)	
Overperformance	0.0322*** (0.00838)	0.0336*** (0.00827)	0.0336*** (0.00834)	0.0359*** (0.00690)
Lend players to other clubs	0.0133*** (0.00372)	0.0147*** (0.00339)	0.0145*** (0.00353)	0.0133*** (0.00340)
Goals	0.00579*** (0.00173)	0.00541** (0.00171)	0.00540** (0.00171)	0.00603*** (0.00139)
Possession	0.138 (0.163)	0.135 (0.171)	0.131 (0.170)	
Mental strength	-0.00344 (0.0558)	-0.00316 (0.0545)	-0.00635 (0.0555)	
Turnover # Turnover		1.687* (0.826)	1.697* (0.821)	0.776* (0.384)
Size # Size		-0.0000276 (0.000100)		
Age # Age		-0.00183 (0.0125)		
Constant	2.735*** (0.449)	1.740 (7.267)	2.882*** (0.456)	2.668*** (0.425)
League Dummy	YES	YES	YES	YES
Year Dummy	YES	YES	YES	YES
Observations	282	282	282	282
R ²	0.522	0.536	0.535	0.524

Notes: Standard errors in parentheses; + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3.2 Results from Random Effects Analysis for Abnormal Value Creation.

3.5 Discussion and Conclusion

3.5.1 Interpretation of Empirical Results

In this study, we investigate how value generation through TM in professional football can be measured (before expenses) using an approach inspired by finance literature on asset portfolio management. For our study, we examine the abnormal value generation through TM for 59 clubs in German Bundesliga, English Premier League, Spanish LaLiga, and Italian Serie A, the four best football leagues in the world, over six years.

We theorized that the potential to generate use-value (in contrast to exchange-value) (Sparrow & Makram, 2015) for an acquired talent is greater shortly after the acquisition than in later periods. Consistent with this argumentation, we find that the turnover of talent in the talent pool leads to higher abnormal value generation with a quadratic relationship between turnover and abnormal value generation (before expenses). These results highlight the importance of turnover for value generation through continuous talent development. Releasing individuals from the talent pool and including new ones creates use-value as new talent is positioned in new social networks and developed through the deployment of tacit organizational knowledge so that the talent's value is leveraged (Sparrow & Makram, 2015).

Regarding the size of the talent pool, measured by the number of players included in the pool, a larger talent pool leads to lower abnormal value generation; this finding is in line with our theoretical arguments. While this finding might be unique to football as the amount of playing time that can be distributed is limited, it could apply to other industries and companies as well, as talent managers have limited time for coaching and feedback, essential processes in talent development.

Another interesting finding related to the size of the talent pool is that the more players are on loan to other clubs the greater the abnormal value generation. The strength of this effect is larger than the decrease in value generation generated by the addition of one player to the

pool of managed talents. This finding indicates that there might be other benefits to loaning players, i.e., that talent can prove and develop new capabilities with different managers and teammates, or from living in a different city or country.

Last but not least, we analyzed the average age of the talent pool and value creation and find that, in line with our theoretical argumentation, the average age of the players in the talent pool linearly impacts abnormal value creation. Greater age leads to lower abnormal value creation. With this result, we also confirm the inverted u-shaped relationship between age and a player's value presented by previous scholars (e.g., Bryson et al., 2013; Deutscher & Büschemann, 2016; Drut & Duhautois, 2017; Gerrard, 2001; Lucifora & Simmons, 2003; Serna Rodriguez et al., 2019), as the value creation is the first derivative of value. It is nevertheless interesting to state that these results not only hold true on an individual level but also on the group level.

We controlled for variables that are specific to our context, such as overperformance, goals, possession, and mental strength. We find that abnormal value creation is strongly linked to overperformance. We defined overperformance as the difference between the actual sportive performance and the expected performance. The actual sportive performance is operationalized as the end-of-season ranking. The expected performance is the ranking based on the combined value of a club's available talent, which has been proven to be a strong driver of sportive performance (Gerhards & Mutz, 2017). The correlation between team value and sportive performance is also apparent in our data.

Regarding value creation, overperformance has a much stronger link to value creation than sportive performance. In line with this, we find a significant correlation between scored goals and abnormal value creation, though this correlation is less significant than that of overperformance. Possession and mental strength are not significantly correlated with abnormal value generation through TM.

While the control variables are not the focus of this study, our analysis reveals additional insights. The transfer balance of the respective transfer period has a significant positive impact on abnormal value creation through TM. Regarding the three critical phases of value creation through TM (acquisition, development, and retention/exit), we find the same significant positive impact only in the talent acquisition phase, which highlights the importance of not overinvesting to acquire talent (ideally spending less for talent acquisition than what is earned from talent release). Additionally, we find two other control variables with a significant impact on abnormal value creation: the value of the talent pool and the number of players on loan to other clubs. The greater the value of the talent pool the lower the abnormal value creation. And, as previously discussed, lending players to other clubs increases abnormal value generation.

3.5.2 Theoretical Implications

Our findings have interesting implications for TM literature. We inform the literature by empirically identifying the first set of antecedents of value generation through TM. The empirical literature stream is dominated by anecdotal evidence often based on single-organization studies. Additionally, we add to what little is known about the outcomes of TM by analyzing value creation through TM in a football-specific context; this offers high transparency on data and talent values. With our research, we find that an increase in talent turnover leads to greater value generation, while an increase in maturity or size of the talent pool results in decreased value generation.

Additionally, our analysis shows enormous differences between the abnormal value generations from TM among organizations and therefore proves that TM can create a substantial competitive advantage.

3.5.3 Practical Implications

Our results have several implications for managers generally and managers in professional football, i.e., sporting directors, specifically.

3.5.3.1 Practical Implications for TM in other Industries

Understanding the factors that influence outcomes of TM, such as value generation, can help practitioners to build a more effective TM approach.

Our findings on turnover show that there are industries and settings in which turnover can lead to an increase in value generation and that organizations can also benefit from talent leaving an organization. TM should ensure sufficient turnover of the talent pool, as the acquisition of new talent provides more opportunities for value generation than the development and regrouping of existing talent. As Sparrow and Makram (2015) described, the value of acquired talent can be created by positioning them in a new social network, combining individual skills with tacit organizational knowledge, and bundling resources together to build new capabilities.

Managers of talent pools should actively think about how they can create value through these activities *without* increasing the size of a talent pool. Combining the findings on talent pool turnover and size, the importance of talent retention and release management becomes evident. While it is necessary for high turnover, without increasing the size of the talent pool, to have talents leaving the talent pool and potentially the entire organization, it is of enormous importance to capture the leaving talent's value (Sparrow & Makram, 2015). Therefore, TM should also include a structured process for talent release. Firstly, this would ensure that value, such as capabilities and knowledge, is kept in the organization through decoding and cross-fertilization before release; and, secondly, this would identify opportunities for value creation even if the talent has already left an organization, e.g., by leveraging the increase of social capital for an organization (Somaya & Williamson, 2011).

We found that lending talent to other organizations can create value as it offers new opportunities and puts attention on development. Following this logic, companies should think about strategic TM approaches that offer the possibility for talent to work for other companies (e.g., suppliers or customers) for a certain time; they will return with additional knowledge and

capabilities that they could not have gained in the original organization i.e. due to lack of managerial attention and/or tacit organizational knowledge.

Last but not least, our results imply the importance of measuring the outcomes of TM. There can be a great difference even between organizations of comparable size in the same industry and the same country. For example, the difference in value generation before expenses between Liverpool FC and Manchester United, two of the largest and most prestigious English clubs in our analysis, is about EUR 720 million, which is more than either club's revenue in the 2018/19 season (Deloitte, 2020). While there might be industries, such as professional football, where the potential value generation from TM is more extensive, our findings highlight the importance of thinking about how to estimate the value of individual talent. Evaluating the individual would allow measuring value creation, which should be one of the critical KPIs of TM in practice.

3.5.3.2 Practical Implications for TM in Professional Football

First, our results highlight the importance of strategically thinking about value generation from TM as the differences between comparable clubs over the five years of our analysis can be greater than their current annual revenues.

Regarding turnover and talent pool size, the implications are similar to other industries. Managers have to analyze how they can create turnover without increasing the size of the talent pool. While there is an inherent focus on new talent acquisition, more attention should be given to how talents can be released and their value captured to successfully provide a place for new talent to develop. Clubs usually want to avoid expiring player contracts, which gives the player the right of a free transfer (Simmons, 1997). Therefore, they should apply TM practices, such as including a fixed transfer fee clause in contracts with a percentage dependent on the remaining contract length. Additionally, management should determine the ideal amount of

time that an individual player should spend with the club and include such thinking in the TM process.

Additionally, our findings on players on loan and talent pool size reveal the importance of a structured TM approach that allows for the development of talent without spending playing time on them. A structured approach to loans could incentivize clubs— through a share of a future transfer fee above a certain threshold, for example—to support the development of players on loan. Another way to increase access to and improve the development of players at other clubs is by building a network of partner clubs. In such a network, each club could play a role in a particular stage of a talent’s development; one club, at the network’s top, could aim for prestigious sportive success using the value creation from TM in the network.

Our findings on the relationship between the average age of the players in the talent pool and value creation underline the importance of identifying and acquiring players at a young age, current practice for many clubs. A second important implication is that, when focusing on value generation from TM, players should not be released later than a certain age when their value starts decreasing. Using the indicated OLS coefficients reported by Serna Rodriguez et al. (2019) and the inverted u-shaped relationship, we calculate the turning point of a player’s market value at roughly 25 years of age.

3.5.4 Limitations and Directions for Future Research

While professional football is a useful setting to investigate TM and value generation as an outcome of TM, it has limitations. We recognize that it is a unique setting and to transfer the approach to other industries with lower transparency on talent value may be challenging. A second limitation is that we assessed value generation before expenses and not the total value generation. Thus, we did not include costs such as player salaries, agent fees, or hand money to players in our analysis as these data are not publicly available for a large number of clubs. Last but not least, the timespan of our panel data is relatively short. While significant and meaningful

due to the relatively high number of included clubs, there is the possibility that our results are specific to the time period.

To address the aforementioned limitations and to gain additional insights on outcomes of TM, there is plenty of space for future research. For example, it would be interesting to study ways to transfer our approach to other industries and apply these concepts. Building on our approach, focusing on a smaller number of clubs could help to overcome shortcomings in data availability; for example, studying value creation after expenses and increasing the period of the analysis would be possible. Additionally, we identified only a small set of antecedents, largely management variables, but did not cover all possible antecedents; we also did not investigate managerial characteristics. We suggest DMCs (Adner & Helfat, 2003) of the sporting directors as a promising tool to start assessing managerial characteristics. Building on DMCs would facilitate understanding the impact of managerial human capital, managerial social capital, and managerial cognition on outcomes of value management and asset orchestration (Helfat et al., 2007).

4 Paper III: The Three Underpinnings of Dynamic Managerial Capabilities and Acquisition Premiums⁵

4.1 Introduction

Established almost 30 years ago (Barney, 1991), the resource-based view (RBV) has been one of the most prominent and influential research streams in the field of strategic management (Barney, Ketchen, & Wright, 2011; Barney, Wright, & Ketchen, 2001). Studying resources and capabilities of organizations and managers led to the concepts of Dynamic Capabilities (DCs) (Teece et al., 1997) as well as Dynamic Managerial Capabilities (DMCs) with their underlying factors: managerial human capital, managerial social capital, and managerial cognition (Adner & Helfat, 2003). Managerial human capital is comprised of learned skills, expertise, and knowledge, generated through experience and education (Adner & Helfat, 2003; Becker, 1964; Schultz, 1961). Managerial social capital consists of “the goodwill that is engendered by the fabric of social relations, and that can be mobilized to facilitate action” (Adler & Kwon, 2002, p. 17) and can provide “essential information about opportunities to acquire and integrate resources” (Blyler & Coff, 2003, p. 680). Managerial cognition is comprised of mental models and managerial beliefs (Adner & Helfat, 2003), also called knowledge structures (Eggers & Kaplan, 2013; Walsh, 1995), and mental processes and emotions (Hodgkinson & Healey, 2011) that are the basis for managerial decision making (Walsh, 1995). Investigating the underpinnings of DMCs individually and in pairs helped to advance our knowledge of DMCs and to understand better how managers impact strategic change. However, there is – with few exceptions – no empirical research (Holzmayer &

⁵ Krüger, H., Schmidt, S. L. (2022). The Three Underpinnings of Dynamic Managerial Capabilities and Acquisition Premiums. Unpublished Working Paper.

Schmidt, 2020; Huy & Zott, 2019; Razmdoost, Alinaghian, & Linder, 2020) that jointly investigates the three underpinnings (Helfat & Martin, 2015), resulting in a lack of understanding, how they jointly matter for strategic change and which of them matters most and under which condition.

We seek to answer this question and strengthen our empirical understanding of DMCs and their underpinnings by examining data from professional sports. Professional sports is an industry in which transparency on individual attributes, performance, and outcomes is much higher and more frequent than in other industries while sharing a range of essential characteristics (Berman et al., 2002). Taking sports as a laboratory, we analyze the combined effect of DMCs' underpinnings, of the manager who is responsible for acquisitions, on the acquisition price premiums. We use sports as a laboratory as player acquisitions in professional football are comparable in some aspects, when it comes to inputs, outputs, and processes to a company acquisition in other industries and they offer high transparency on characteristics of responsible managers. In acquisition research, price premiums, defined as the difference between the target's market value and the acquisition price, are one significant factor for low acquisition performance (Haunschild, 1994) and are “considered a relevant dependent variable on their own” (Haleblian, Devers, McNamara, Carpenter, & Davison, 2009, p. 485) and widely used in acquisition research (e.g., Bertrand, Betschinger, & Settles, 2016; Chen & Lin, 2018; Sam Y. Cho, Arthurs, Townsend, Miller, & Barden, 2016; Hayward & Hambrick, 1997; Malhotra, Zhu, & Reus, 2015) and from high managerial importance (e.g., Sirower, 1997).

Managerial characteristics of CEOs and top management teams were identified as impactful to paid premiums (Chen & Lin, 2018; Sam Y. Cho et al., 2016; Hayward & Hambrick, 1997; Roll, 1986). However, there is a lack of understanding of how managerial capabilities in deal-making reside within operationally responsible teams in an organization (Golubov, Yawson, & Zhang, 2015). It remains unclear how the DMCs of the “deal owner,”

who “leads the acquisition effort and the negotiation” (DePamphilis, 2011), affect acquisition price premiums and the acquirer's returns (Benson, Davidson, Davidson, & Wang, 2015).

With our study, we aim to fill this research gap by investigating how managerial human capital, managerial social capital, and managerial cognition jointly impact the DMCs of the sporting director in professional football and the premiums paid for resource acquisitions in his or her responsibility. The sporting director is the equivalent of the deal owner of an acquiring organization and the person who is responsible for strategic change in the sports department of a football club. With our approach, we follow several researchers who have used research settings with professional sports teams to test resource-based theory (e.g., Berman et al., 2002; Moliterno & Wiersema, 2007; Poppo & Weigelt, 2000; Sirmon et al., 2008). By using professional sports as a research setting, we benefit from the high availability of data (Goff & Tollison, 1990) in sports, not only at the level of TMT but also at the level of operationally responsible individuals, such as the deal owner of an acquisition effort. Additionally, research settings in professional sports are well suited to longitudinal studies, which are essential to test research-based theory (Barney, 2001; Rouse & Daellenbach, 1999; Wolfe et al., 2005).

Our findings suggest that when the deal owner’s attention, one type of managerial cognition, on the acquisition is reduced, acquisition premiums and consequently risk-taking increase. In addition, we find that both, increased social and human capital result in higher price premiums. Our results further demonstrate that a change in attention has the biggest impact on acquisition premiums under most conditions, but in situations of good recent organizational performance, the impact of human capital on acquisition premiums exceeds the impact of managerial attention.

For managerial cognition and managerial social capital, our results are in line with what we expected based on theory and previous research. However, our results show that the impact of the managerial human capital of the deal owner on price premiums is opposite to what we

expected. We find evidence that human capital leads to hubris, which results – as found by Hayward and Hambrick (1997) – in higher acquisition premiums and risk-taking. Therefore, we are not only among the first to analyze all three underpinnings of DMCs to address the open question, of which underpinnings matter most (Helfat & Martin, 2015), but we are also one of the few studies to find that human capital can be a two-edged sword.

4.2 Theory and Hypotheses

4.2.1 Dynamic Managerial Capabilities

The concept of DMCs was introduced by Adner and Helfat (2003) as an extension of the DCs perspective (Eisenhardt & Martin, 2000; Teece et al., 1997) by “directing attention to the role of managers, individually and in teams” (Helfat & Martin, 2015, p. 1282). The concept of DCs defines capabilities that enable a firm to integrate, build, and reconfigure resources as a strategic response to changes. DMCs shift the focus to managerial impact on strategic change and are defined analogously to DCs as “the capabilities with which managers build, integrate, and reconfigure organizational resources and competencies” (Adner & Helfat, 2003, p. 1012). Managers with superior DMCs will be able to adjust more effectively, thereby contributing to the competitive advantage of a firm (Helfat & Martin, 2015). DMCs are underpinned by three attributes that affect strategic change: managerial cognition, managerial human capital, and managerial social capital (Adner & Helfat, 2003). Each of these three underpinnings interacts with one another (Adner & Helfat, 2003; Kor & Mesko, 2013) but it is unknown which of the underpinnings matters most for strategic change and under which conditions due to the lack of a joint empirical examination of the three underpinnings’ impact on strategic change (Helfat & Martin, 2015). There are, to the best of our knowledge, only three publications (Holzmayer & Schmidt, 2020; Huy & Zott, 2019; Razmdoost et al., 2020) that incorporate all three underpinnings into one empirical analysis. Razmdoost et al. (2020) investigate the role of DMCs in venture success in different environments, Holzmayer and Schmidt (2020) examine

the impact of DMCs on an organization's diversification strategy, and Huy and Zott (2019) focus on how managerial cognition influences managerial human capital and managerial social capital. However, Huy and Zott (2019) do not emphasize the combined influence of the three underpinnings on strategic change.

4.2.2 The Underpinnings of Dynamic Managerial Capabilities and Acquisition Price Premiums

Related to acquisitions, acquisition selection ability, acquisition identification capability, and acquisition reconfiguration ability have been identified as acquisition-based DCs and investigated in previous research (e.g., Helfat et al., 2007; Kaul & Wu, 2016; Laamanen & Keil, 2008; Zollo & Singh, 2004). Out of these three capabilities, the acquisition identification capability is the most relevant for acquisition premiums, as the acquisition identification capability comprises detection and evaluation of and negotiation with targets but also to decide against an acquisition if the cost of the acquisition exceeds the value for the acquirer (Helfat et al., 2007).

4.2.2.1 Managerial Cognition and Acquisition Premiums

Managerial cognition is comprised of mental models and managerial beliefs (Adner & Helfat, 2003), also called knowledge structures (Eggers & Kaplan, 2013; Walsh, 1995), and mental processes and emotions (Hodgkinson & Healey, 2011) that are the basis for managerial decision making (Walsh, 1995). Regarding the latter, Helfat and Peteraf (2015) defined the concept of cognitive capabilities as the “capacity of an individual manager to perform one or more of the mental activities that comprise cognition” (p. 835); they further describe how cognitive capabilities support processing information and shaping DMCs and strategic responses to change. Examples of mental activities include attention, perception, problem-solving, reasoning, and communication (Helfat & Peteraf, 2015).

Several studies have examined the role of managerial attention in strategic change. Laamanen and Wallin (2009) identified that managerial attention impacts, which operational capabilities become a focus for development. Nadkarni and Barr (2008) found that managerial attention toward the general environment improves the speed of response to changes in the external environment. Eggers and Kaplan (2009) supported these findings by showing that CEOs who paid greater attention to emerging technologies entered new markets more quickly. Their findings are bolstered by documentation of the CEO of Rubbermaid, whose failure to allocate managerial attention to changes in the retail market resulted in a performance decline (Helfat et al., 2007). These studies suggest that the extent and speed of strategic change and, consequently, performance under conditions of change improve with an increase in managerial attention; a lack of attention leads to opposite results.

While no research investigates the impact of managerial attention on acquisition premiums, our hypothesis follows previously mentioned research results on the impact of managerial attention on strategic change and performance under conditions of change. Kim, Haleblan, and Finkelstein (2011) argue that firms in which managerial attention is bound to other strategic initiatives, such as post-merger integration, are more likely to depend on additional acquisitions and, therefore, willing to pay a higher acquisition premium than firms, with more managerial attention. In line with the assumption that lower acquisition premiums lead to better acquisition performance (e.g., Haleblan et al., 2009; Krishnan, Hitt, & Park, 2007), we expect that higher attention of the responsible manager would lead to lower acquisition premiums.

Hypothesis (H1). *A higher level of attention of the manager that is responsible for the acquisition of a target will reduce the acquisition premium paid for the target.*

4.2.2.2 Managerial Human Capital and Acquisition Premiums

Managerial human capital is comprised of learned skills, expertise, and knowledge, generated through experience and education (Adner & Helfat, 2003; Becker, 1964; Schultz, 1961). Managers can use their acquired skills, expertise, and knowledge to seize and sense opportunities and reconfigure structure, capabilities, and resources (Helfat & Martin, 2015).

As mentioned previously, the acquisition identification capability is the most relevant for acquisition premiums, as the acquisition identification capability comprises detection and evaluation of and negotiation with targets. As managers are likely to differ in their capacity to detect and negotiate with relevant targets because of differences in their learned skills and expertise built by experience and education, we expect that managerial human capital impacts the acquisition identification capability.

Empirical studies related to the impact of managerial human capital on acquisition premiums present different conclusions. Some scholars argue that increased confidence to extract value from an acquisition leads to higher readiness to pay premiums (Haleblian et al., 2009). Hayward and Hambrick (1997) have also shown that CEO hubris, including recent media praise for the CEO and self-importance, will lead to higher acquisition premiums.

Another managerial characteristic that can be linked to managerial human capital and which has been identified to impact acquisition premiums is managerial capability. Chen and Lin (2018) found that higher managerial capability led to lower acquisition price premiums paid for a target. The “view of managerial ability as consisting of knowledge, skills, and experience embodied within an individual is largely consistent with prior descriptions of human capital” (Holcomb, Holmes Jr., & Connelly, 2009, p. 459). It develops through general and specific experience, which managers gain over time (Borman, Hanson, Oppler, Pulakos, & White, 1993; Cannella & Holcomb, 2005; Holcomb et al., 2009; Kor, 2003; McCall, Lombardo, Lombardo, & Morrison, 1988). As managerial ability is related to human capital, we follow

Chen and Lin (2018) and assume that increased human capital, will lead to better results for the acquirer, which in our case means lower risk-taking due to lower acquisition premiums.

***Hypothesis (H2).** A higher managerial human capital of the manager that is responsible for the acquisition of a target will reduce the acquisition premium paid for the target.*

4.2.2.3 Managerial Social Capital and Acquisition Premiums

Managerial social capital consists of “the goodwill that is engendered by the fabric of social relations, and that can be mobilized to facilitate action” (Adler & Kwon, 2002, p. 17). Social ties, and the goodwill resulting from these ties, can transfer to work settings, where they provide “essential information about opportunities to acquire and integrate resources” (Blyler & Coff, 2003, p. 680). We expect managerial social capital to influence acquisitions in general, but especially the dynamic managerial acquisition identification capability due to access to essential information. Blyler and Coff even argue that firms without the social capital of individuals “would be unable to acquire, recombine, and release resources” (2003, p. 680). Existing studies on the impact of managerial social capital on acquisitions are scarce. Haunschild (1993) found that managers with greater network centrality and a higher number of external ties undertake more acquisitions. From a target perspective, social capital impacts the probability of being acquired, with an inverted U-shape (Mazzola, Perrone, & Kamuriwo, 2016).

Regarding acquisition performance, Cho and Arthurs (2018) found that alliance experience, a potential source of social capital, “can help acquirers develop organizational knowledge and capabilities and thus influence acquisition outcomes” (p. 10). Regarding acquisition premiums, Zhu (2013) investigated how prior premiums paid for acquisitions can lead to polarizing social processes within a board of directors and impact acquisition premiums.

To the best of our knowledge, no study investigates the impact of managerial social capital on acquisition premiums directly.

Acquisition premiums are one result of the dynamic managerial acquisition identification capability, which comprises detection of and negotiation with appropriate targets but also the decision not to conclude an acquisition (Helfat et al., 2007). We argue that, at least in a market with high competition and high transparency, managerial social capital will impact the dynamic managerial acquisition identification capability and increase acquisition premiums, mainly because of the following argumentation: A manager that has only public information about a potential target would be willing to pay a specific acquisition price including a potential premium. A manager with access to internal information, as a result of his social ties, would either be willing to pay a lower price if the information suggests that the target is less performant or fewer synergies exist or a higher price in the opposite case. As shareholders of the target usually aim for maximizing the acquisition price, they would – in the case of different bidders with different levels of information – favor managers with public information only, over managers with internal information which reduced their willingness to pay. In this case, managerial social capital would result in the decision not to buy a target, which is also part of the dynamic managerial acquisition identification capability. When the information resulting from social ties suggests a higher potential than publicly known, the manager with access to this information would be willing to pay a higher price and, consequently, a higher acquisition premium for the target. In this case, he would be in favor of completing the acquisition compared to managers with public information only. The described mechanism can also be applied to professional football, where internal information especially on mental capabilities and future development potential of a player can result in a different willingness to pay for the player acquisition. Therefore, we derive the hypothesis that managerial social capital will increase the acquisition premium for the acquirer.

***Hypothesis (H3).** In a market with multiple bidders, a higher managerial social capital of the manager that is responsible for the acquisition of a target will increase the acquisition premium paid for the target as only a higher willingness to acquire resulting from managerial social capital would lead to an acquisition, while in case of lower willingness to acquire other bidders would acquire the target as they would offer a higher price.*

4.3 Methods

4.3.1 Data and Sample

To test our hypotheses, we used data from player acquisitions in the German professional football league, called Bundesliga, and sporting directors⁶, which were responsible for the player acquisitions. In the Bundesliga, sporting directors are responsible for strategic change in the sports department, including the strategic change to the most valuable resources of a football club, the players. Using data from player acquisitions and responsible sporting directors is appropriate for several reasons. First, there is high comparability between sports teams across dimensions such as goals, structure, and size (Allen, Panian, & Lotz, 1979); and they share the same general environment. These commonalities are important as resource-based theory focuses on comparing organizations within industries (Mahoney, 1995; Peteraf & Barney, 2003).

Additionally, the individual tasks of the sporting directors, whose impact on strategic changes to the resource base we examine through the lens of DMCs, are similar across football clubs in the Bundesliga and comparable to those of acquisition managers in other industries. A

⁶ The official name for the sporting director role varies from club to club (Parnell, Widdop, et al., 2018). We included the following names for equivalent roles: Director of Sport, Director of Football, Managing Director Sport, and Sporting CEO.

sporting director's most crucial task is resource management (Horch & Schütte, 2003) with a focus on player acquisitions (Parnell, Groom, Widdop, & Ward, 2018). Sporting directors and the departments they are leading are responsible for identifying potential target players, leading negotiations regarding the acquisition fee with the selling organization, and supporting the integration of the player into the current organization (Parnell, Groom, et al., 2018). Similarly, the critical tasks of an acquisition manager in other industries are to identify potential targets, negotiate contract terms and purchase prices, and select the right target (Schuler & Jackson, 2001). By exploring the three underpinnings of DMCs in a sports setting, we follow several researchers who tested resource-based theories in the sports laboratory (Berman et al., 2002; Moliterno & Wiersema, 2007; Sirmon et al., 2008).

Our dataset contains all senior player acquisitions of Bundesliga clubs throughout 14 Bundesliga seasons, from 2005/06 to the 2018/19 season; there were 1,710 acquisitions. Professional football players often play on youth teams until the age of 18 as the “Under 19” is the last regular youth team for Germany Bundesliga clubs. As market values for youth players are often unreliable or nonexistent, we focus our analysis on acquisitions of senior players who were at least 19 years old at the time of acquisition. For each player acquisition, we first collected the respective market value at the time of acquisition and the acquisition fee paid; this information was mined exclusively from the online football data platform [transfermarkt.de](https://www.transfermarkt.de), which is an established data source for football-related research (e.g., Matesanz et al., 2018; Peeters, 2018; Prockl & Frick, 2018; Schreyer, 2019). For 64 data points, there was no data on the market value or acquisition price available on the platform. We removed these acquisitions from our dataset. We enriched the acquisition data by identifying the responsible manager for each club for the transfer period at the time of acquisition; this information was partially available on the same platform and supplemented by newspaper and magazine articles on the different clubs' organizational structures. For each relevant manager, we collected data to

operationalize managerial human capital, social capital, and cognition using transfermarkt.de. Finally, we removed 339 acquisitions made by new sporting directors who became directors too recently (relative to the acquisition) to rule out the influence of the previous sporting director on the transfer, or which were completed during the transition phase by an interim sporting director. Consequently, our final dataset consisted of 1,307 player acquisitions.

4.3.2 Measures

4.3.2.1 Dependent Variable.

Acquisition premiums are defined as the difference between the purchase price and the target's market value before the acquisition, divided by the target's market value before the acquisition. In our analysis, we calculate the acquisition price premiums with this formula, using the paid transfer fee as the purchase price and the market value of the acquired player as the target's market value.

4.3.2.2 Independent Variables

For the operationalization of the manager's attention, we enriched player acquisition data with data on head coach dismissals and new appointments. In the Bundesliga, one of the critical areas of the work of sporting directors is human resource management (Horch & Schütte, 2003; Parnell, Widdop, Groom, & Bond, 2018), which includes acquiring new players and, mostly in the case of poor performance, firing the current manager and electing a new one (Nissen, 2016). Usually, sporting directors can focus on player acquisition, but when a head coach has been dismissed, the most important task becomes identifying, negotiating with, and hiring a new head coach. The identification of and negotiation with the new head coach is a non-routine activity (Fernandez-Duque, Baird, & Posner, 2000) that requires a significant amount of executive attention (Ocasio, 2011). The appointment of a new head coach during a transfer period leaves less attention on player selection and acquisition. Therefore, we modeled attention as a binary variable: one indicating normal attention, when there was no head coach

change in the transfer period and zero, if the head coach was changed, reflecting reduced attention for player selection and acquisition.

For the operationalization of human capital, we follow past research, in which education and work experience are the key components to measure human capital (e.g., Geletkanycz & Boyd, 2011; Helfat & Martin, 2015; Khanna, Jones, & Boivie, 2014). We collected employment data on the relevant managers to measure their tenure in the position (e.g., Barker & Mueller, 2002; Gerstner, König, Enders, & Hambrick, 2013; Kaplan, 2008; Miller & Shamsie, 2001) of a sporting director or an equivalent role.

For the operationalization of social capital, we follow previous research that used former employers as a proxy for the social capital of managers (Pennings, Lee, & Van Witteloostuijn, 1998). For this study, we summed the number of different clubs where a manager held a management position (before his current position). Consistent with the measurement for managerial human capital, we only considered clubs that were part of at least one Bundesliga player acquisition over the period of our sample.

4.3.2.3 Controls

In line with previous research (e.g., Benson et al., 2015), we control for transaction characteristics, such as the log of the transaction and market value, and an indicator variable specifying whether acquiring and target organizations are in the same country or in the same league. Testing for similarities of leagues and countries can be compared to controlling for the industry-relatedness of the target in other research settings (Benson et al., 2015; Golubov et al., 2015). Specific to player acquisitions in football, we control for acquirer and target-specific controls. Therefore, we include the maturity of the player, operationalized as age at the time of acquisition, as acquisitions of young players offer a higher potential return than acquisitions of older players, which should also impact the acquisition premium. We also control for the position of the acquired player, which is comparable to testing for different industries in other

settings. We include the number of player acquisitions per transfer period⁷ in which the acquiring organization was involved, and we also control for the influence of newness of the sporting director – operationalized as one, if it is the first year of a sporting director in the acquiring club. Finally, we also included a time variable at the season level to control for intertemporal differences.

4.3.3 Estimation Method

We conducted an ordinary least square regression analysis with different models using White (1980) errors robust to heteroscedasticity.

4.4 Results

Table 4.1 presents the means, standard deviations, and correlations among the variables measured in the model. The variance inflation factor analysis (VIF) showed that the mean of VIF scores is 1.90 (range of VIF scores from 1.12 to 3.62), indicating no issues of multicollinearity. Table 4.2 represents the results of the OLS analysis using White (1980) errors robust to heteroscedasticity.

In Hypothesis 1, we proposed that managers with higher attention towards the acquisition would pay lower acquisition premiums compared to managers with lower attention. Using Model 1 to examine Hypothesis 1, we find that managers with higher attention pay 18.83% lower premiums for player acquisitions than managers with lower attention ($p = 0.024$), thus confirming our hypothesis. Examining the influence of managerial human capital on the paid premiums (Hypothesis 2), we find that an increase in managerial human capital by one additional year of experience as a sporting director increases premiums by 1.08% ($p = 0.010$).

⁷ In professional football in Europe, there are two periods where player acquisitions are possible: in July and August or in January.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 Premium	1															
2 Age	-0.3723	1														
3 Season	0.2587	-0.0936	1													
4 Ln transaction value	0.5263	-0.2813	0.2158	1												
5 Ln market value	-0.0031	0.1699	0.2011	0.3974	1											
6 Acquisitions in period	-0.0922	0.0291	0.0413	-0.1018	-0.0875	1										
7 Sales in period	-0.0289	0.0443	0.0715	-0.0343	0.0245	0.5556	1									
8 Relative recent performance	-0.0181	-0.0812	-0.0392	-0.0716	-0.1125	0.0723	-0.1303	1								
9 Same league	-0.0915	0.1219	0.0664	-0.0131	0.1921	-0.0109	0.0233	-0.044	1							
10 Same country	-0.1604	0.026	0.0236	-0.1908	-0.1128	0.0781	0.0924	0.0145	0.6099	1						
11 First year	-0.0567	0.0454	0.0951	-0.0574	-0.1089	0.1599	0.1747	-0.0374	-0.0417	-0.0131	1					
12 Position	0.0600	-0.0752	-0.0089	0.1688	0.2009	-0.0439	-0.0495	0.0486	0.0009	-0.0142	0.0044	1				
13 Absolute recent performance	-0.1377	0.0809	-0.0376	-0.1816	-0.3399	0.1824	0.051	-0.1765	-0.0804	0.0583	0.0698	-0.0126	1			
14 Human capital	0.0681	0.0053	0.1184	0.0713	0.1555	-0.0656	-0.0565	-0.0703	0.0443	0.0166	-0.0516	0.0127	-0.2525	1		
15 Social capital	0.0557	-0.043	0.1429	0.0257	0.062	0.0452	0.0099	0.0716	0.0002	-0.0588	0.1247	-0.0079	-0.1042	-0.2135	1	
16 Attention	-0.0884	0.0199	-0.0684	-0.0536	-0.1039	0.0767	-0.0563	0.0703	-0.0204	0.0403	-0.0034	0.063	0.1179	-0.0666	0.0333	1
Mean	-28.597	24.563	2011.523	9.893	14.440	6.152	6.250	2.488	0.306	0.542	0.536	1.846	10.342	8.723	4.147	0.849
SD	98.348	3.594	4.076	6.770	1.177	2.873	3.204	6.558	0.461	0.498	0.499	0.968	5.678	6.093	2.252	0.359
Minimum	-100.000	19.000	2005.000	0.000	10.127	1.000	0.000	-14.800	0.000	0.000	0.000	0.000	1.000	0.496	1.000	0.000
Maximum	900.000	39.000	2018.000	17.577	17.728	16.000	17.000	37.400	1.000	1.000	1.000	3.000	21.000	29.022	9.000	1.000

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$; SD = Standard Deviation

Table 4.1 Descriptive Statistics: Means, Standard Deviations, and Correlations.

	M1	M2	M3
Age	-4.623*** (0.512)	-4.225*** (0.482)	-4.161*** (0.480)
Season dummy	YES	YES	YES
Ln transaction value	7.269*** (0.362)	7.246*** (0.352)	7.327*** (0.369)
Ln market value	-22.96*** (3.721)	-26.20*** (4.207)	-24.81*** (3.985)
Acquisitions in period	-1.910* (0.919)	-1.356 (1.017)	
Sales in period	0.833 (0.955)	0.446 (1.112)	
Same league	7.614 (5.466)	6.637 (5.432)	
Same country	-20.46** (6.206)	-19.63** (6.306)	-16.17*** (4.417)
First year	-11.85** (4.451)	-12.05** (4.275)	-12.82** (4.455)
Position			
Goalkeeper	Reference	Reference	Reference
Defender	10.38 (9.330)	14.56 (9.234)	13.35 (9.626)
Midfielder	6.473 (9.145)	10.36 (8.952)	9.654 (9.108)
Striker	12.90 (9.392)	17.88* (9.035)	16.21+ (9.363)
Human capital	1.079** (0.417)	2.357* (0.985)	2.339*** (0.690)
Social capital	2.526* (1.011)	2.171* (0.990)	2.351* (1.004)
Managerial attention	-18.83* (8.332)	-16.96* (8.230)	-19.72* (8.394)
Relative recent performance		0.302 (0.847)	
Relative recent performance # Human capital		-0.0983 (0.0669)	
Absolute recent performance		-0.253 (0.761)	
Absolute recent performance # Human capital		-0.170* (0.0789)	-0.176*** (0.0510)
Constant	330.3*** (62.74)	367.5*** (69.77)	340.5*** (62.08)
Observations	1,307	1,307	1,307
R ²	0.433	0.442	0.439

Notes: Standard errors in parentheses, + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4.2 Results of OLS Analysis for the Relationship between the Underpinnings of DMCs and Acquisition Premiums.

This effect is opposite to our argumentation; we argued that managerial human capital results in knowledge, skills, and expertise (Adner & Helfat, 2003; Becker, 1964), which increase managerial ability and reduce acquisition premiums (Chen & Lin, 2018). One explanation for this contradictory finding could be that managerial human capital could also result in managerial hubris. Previous research found that managerial hubris increases acquisition price premiums as managers are more self-confident that they will extract value from an acquisition (Hayward & Hambrick, 1997). Hayward and Hambrick (1997) identified three sources of CEO hubris: recent organizational performance, CEO media praise, and CEO self-estimate. To test the hypothesis that managerial human capital leads to an increase in hubris, we use recent organization performance – which, in football, also leads to media praise – as a proxy for hubris. If the impact of human capital on price premiums is a consequence rather of hubris resulting from human capital, then recent performance should moderate this relationship; better recent performance would increase the impact of human capital on acquisition premiums and a poor recent performance would reduce the increase or even invert the impact of human capital on price performance (see Figure 4.1). To test this, we use a second model including two proxies of a recent performance in our analysis: absolute recent performance, the current rank in the league table, and relative recent performance, the difference of the current rank to the three-year average end of season rank⁸. The results of the regression show that a lower rank in the league table and, therefore, lower hubris, reduces the strength of the positive relationship between managerial human capital and acquisition price premiums by 0.17% ($p = 0.028$) per year of human capital. Therefore, we conclude, that at least

⁸ To test robustness of our results, we also run models operationalizing the relative recent performance as difference of the current position in the league ranking to the (average) ranking at the end of the last 5, 4, 2, 1 season(s). The results were confirmed.

in professional football, managerial human capital increases the hubris of the acquirer thereby increasing the paid acquisition premiums.

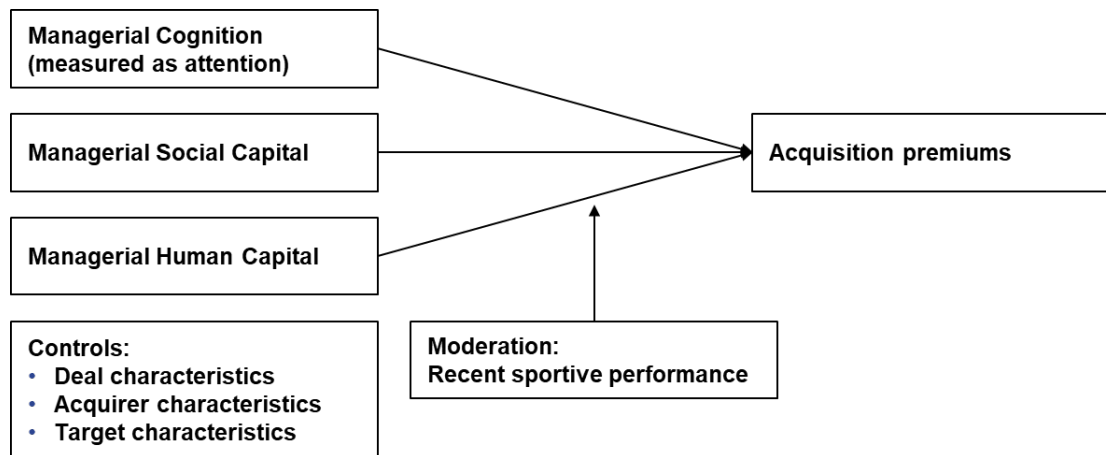


Figure 4.1 Model Used for M2 and M3 Including the Three Underpinnings of DMCs and a Potential Moderation Effect of Recent Sportive Performance.

Finally, we assumed that the acquirer's managerial social capital would increase the paid acquisition premium, as the information received from social ties will have an impact only if that information would increase the target value in the eyes of the acquirer (Hypothesis 3). In the opposite case, other bidders would acquire the target as they would be willing to pay a higher acquisition price. Our data support the hypothesis: an increase in price premium of 2.53% ($p = 0.013$) using M1 and 2.17% ($p = 0.025$) using M2 for every additional organization from which the responsible manager could benefit from insight information based on his social ties built in the past. To test the robustness of our result, we ran a reduced model 3, where we excluded all statistically insignificant terms. The results remain unchanged.

To answer the question of which underpinning matters most (Helfat & Martin, 2015), we compared the product of the regression coefficients resulting from M3 and the mean values for each underpinning to make the impact on acquisition premium comparable. As absolute recent sporting performance moderates the relationship between human capital and acquisition premiums, we calculated the impact of human capital for the mean and $\pm 1\sigma$ from the mean of

the sporting performance following previous scholars (Aiken, West, & Reno, 1991; P. Cohen, Cohen, West, & Aiken, 2014). Results are presented in Table 4.3 and visualized in Figure 4.2. We found that, on average, managerial attention has the biggest impact on acquisition premiums, followed by managerial human capital and managerial social capital. If the sporting performance deviates more than -1.4σ from its mean, we found that the impact of managerial human capital on acquisition premiums exceeds the impact of managerial attention.

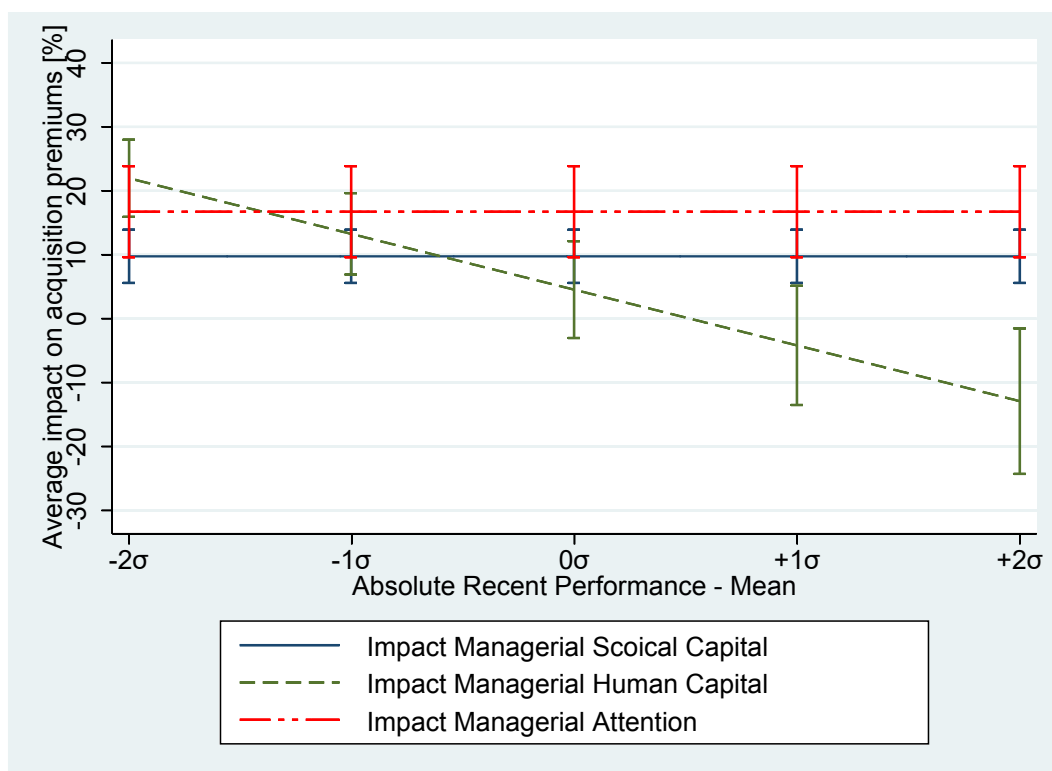


Figure 4.2 Comparison of the Impact of Managerial Social Capital, Managerial Human Capital, and Attention on Acquisition Premiums for Different Absolute Recent Performances.

4.5 Discussion

In this study, we examine how the underpinnings of DMCs of managers responsible for resource acquisition impact the price premium paid for the acquisition. For our research, we examined 1,307 acquisitions of professional football players in the German Bundesliga over a 14-year period.

	Mean	SD	Coefficient of regression	Error coefficient of regression	Size of impact						
					Value for absolute recent performance (in σ)						
					-1.5 σ	-1.0 σ	-0.5 σ	$\pm 0 \sigma$	+0.5 σ	+1.0 σ	+1.5 σ
Human Capital	8.72	6.09	2.34	0.69	17.60	13.24	8.88	4.52	0.16	- 4.19	- 8.55
Social Capital	4.15	2.25	2.35	1.00	9.75	9.75	9.75	9.75	9.75	9.75	9.75
Attention	0.85	0.36	- 19.72	8.39	- 16.73	- 16.73	- 16.73	- 16.73	- 16.73	- 16.73	- 16.73
Absolute Recent Performance # Human Capital	10.34	5.68	- 0.18	0.05							

Table 4.3 Comparison of Impact Size of DMCs' Underpinnings on Acquisition Premiums including Moderating Effect of Absolute Recent Performance on Managerial Human Capital.

Consistent with our theoretical arguments, we find that the managerial social capital of the acquiring manager increases the paid premiums due to the interplay of the information asymmetry resulting from managerial social capital and a market with competition. Regarding attention, one example of managerial cognition, we find that a reduction in attention leads to higher premiums for the acquirer, which is consistent with the theoretical argumentation that lower attention leads to less favorable outcomes.

Counterintuitive to our initial argumentation, we find that managerial human capital does not have a negative relationship with acquisition price premiums but rather leads to an increase in acquisition premiums and therefore an increase in risk-taking. While we argued initially, that managerial human capital would increase managerial ability and thereby reduce acquisition price premiums (Chen & Lin, 2018), our analysis shows that an increase in managerial human capital results in an increase in acquisition price premiums. Additional analysis revealed that the current league position as a proxy for recent performance and recent media praise and source for managerial hubris (Hayward & Hambrick, 1997), moderates the relationship between managerial human capital and acquisition price premiums. Hence, we find indications for the argument that managerial human capital is – at least in the context of professional football – a driver of managerial hubris and leads to increased acquisition price premium, equivalent to an increase in risk-taking.

4.5.1 Contribution to Dynamic Managerial Capabilities Theory

With our study, we contribute to the further development of RBV and one of its spin-offs, DMCs. We achieve this by incorporating managerial cognition, managerial human capital, and managerial social capital in one empirical analysis in a different context than the previous studies that incorporated the three underpinnings (Holzmayer & Schmidt, 2020; Huy & Zott, 2019; Razmidoost et al., 2020).

We find that all three underpinnings of DMCs jointly impact how managers induce change in an organization. Being amongst the first to empirically investigate the impact of the three underpinnings on changes to the resource base, we confirm that they all matter and that they all matter at the same time. We provide a first answer to the questions: Which underpinnings matter most and under which conditions (Helfat & Martin, 2015)? We show that managerial cognition, operationalized as attention, matters most in conditions where recent organizational performance has neither been extremely strong nor extremely poor. In situations where recent performance is extremely strong, we find that the influence of human capital on strategic changes to the resource base can exceed the impact of managerial cognition.

By showing that managerial human capital leads to an increase in risk-taking by paying higher acquisition premiums, we are also one of the few studies to find that human capital, which is often found to be a source of value creation and managerial capability (Borman et al., 1993; Cannella & Holcomb, 2005; Holcomb et al., 2009; Kor, 2003; McCall et al., 1988), might be a two-edged sword and can have a negative impact on strategic changes to the resource base. This finding offers the first piece of evidence to answer the question under which conditions the three underpinnings of DMCs have a positive, negative, or no impact on strategic change (Helfat & Martin, 2015).

Our research setting, the Bundesliga, is characterized by high media coverage, offering high transparency and pressure on individuals and their performance and results. While the pressure on CEOs and TMTs, e.g., through shareholders and investors, is also high in other industries, the transparency on individual performance for external stakeholders is much higher and more frequent in sports than in most industries. Therefore, we conclude, that in situations where individual performance is highly transparent for external stakeholders, human capital can lead to increased risk-taking in situations with good recent performance and can have a negative impact on strategic change to the resource base, such as an increase in risk-taking in our setting.

4.5.2 Contribution to Acquisition Theory

We contribute to the existing research on antecedents of acquisition price premiums by identifying characteristics of managers responsible for acquisitions and negotiations of acquisition prices that impact price premiums. Confirming the importance of network ties as a driver for acquisition behavior, we add that network ties not only increase acquisition activity as identified by Haunschild (1993) and Haunschild & Beckman (1998) but also lead to higher acquisition price premiums; i.e., in increased risk-taking. Scholars previously identified managerial self-interest, such as compensation, managerial hubris, and target defense tactics, as key factors for value destruction (Haleblian et al., 2009). Our findings on managerial human capital, resulting in managerial hubris in conditions of good recent performance, support these results. Additionally, we identified missing managerial attention as an additional factor of potential value destruction.

4.5.3 Managerial Implications

Our results have several implications for managers in general, as well as for sporting directors specifically. Probably most obvious, as managerial cognition, human capital, and social capital all matter, firms and managers should invest in all three dimensions.

Our findings on the impact of managerial attention on acquisition premiums highlight the importance of appropriately staffing teams and acquisition managers that are operationally responsible for the acquisition process. A lack of managerial attention of the acquisition manager leads to higher acquisition premiums and therefore in the best case to an increase in risk-taking or directly to a loss of value. Specific to the work of the sporting director in professional football clubs, our results imply that changing a coach during an acquisition window is linked to higher risk-taking for acquisitions (in addition to the general risk of changing a head coach). These findings should be taken into account by sporting directors in determining when to change the team's head coach.

While human capital is important and increases skills, expertise, and knowledge (Adner & Helfat, 2003; Becker, 1964; Schultz, 1961), managers, board members, and supervisory board members should be careful, especially in industries with high media coverage and transparency on outcomes in situations with good recent performance to detect early signs of managerial hubris and excessive risk-taking of experienced managers.

Last but not least, the relationship between managerial social capital and acquisition premiums implies that club owners and CEOs should be aware of the potential up- and downsides of hiring sporting directors with a high number of external ties and, therefore a high managerial social capital. While there might be a good reason for increased risk-taking as managers can better seize opportunities due to access to non-public insights, cautiousness is required, especially as managers with a high number of external ties tend to acquire more often (Haunschild, 1993; Haunschild & Beckman, 1998).

4.5.4 Limitations and Directions for Future Research

Our research has limitations. Our setting in professional football and the Bundesliga, in particular, is useful to investigate the managerial characteristics of the manager responsible for the acquisition and negotiations of acquisition price premiums. On the other hand, we recognize that the acquisition of football players and the acquisition of companies, despite having many similarities, are not entirely the same. An interesting way forward to investigate the characteristics of the manager or teams responsible for acquisitions in other industries might be a survey-based approach to identify individual team members' responsibilities, capabilities, and the impact on acquisition results. To mitigate the disadvantages of survey-based research, action research (Lewin, 1946) could also be a research technique for future research in this field. Both approaches might also generate insights on which part of the acquisition process – from target screening over due diligence to acquisition price negotiations – has the biggest impact on the acquisition price premium.

Regarding DMCs, our research builds on using all three identified underpinnings of DMCs and their impact on strategic change to the resource base. It is important to analyze the three underpinnings jointly in different settings to understand which matters most under which conditions, but also to understand the specific conditions under which there is a positive, negative, or no impact on strategic change. Additionally, as we focused our research on how the underpinnings of DMCs impact strategic change to the resource base, it remains an open question, how they subsequently impact performance under conditions of change.

5 Conclusion

5.1 Summary of Findings

In this dissertation, I contributed to the understanding of *how TM can contribute to organizational success and create value* by providing three research papers. In these papers, I addressed three distinctive, but interrelated research questions that contributed to specific research gaps or helped to advance methodology in the field of TM research:

RQ I: What are pivotal positions where talents make the highest contribution to organizational performance?

RQ II: What are the sources and antecedents of value creation through TM?

RQ III: How do DMCs of the manager responsible for talent acquisition impact value generation from talent acquisition?

The following section contains a condensed synthesis of the findings from each of the three research papers of this dissertation, which all contribute by linking TM to organizational success or value creation.

Building on the definition of TM as “activities and processes that involve the systematic identification of key positions which differentially contribute to the organization’s sustainable competitive advantage, the development of a talent pool of high potential and high performing incumbents to fill these roles, and the development of a differentiated human resource architecture to facilitate filling these positions with competent incumbents and to ensure their continued commitment to the organization” (Collings & Mellahi, 2009, p. 304), I started with identifying key positions that have the highest contribution to organizational success in professional football in Paper I. The analysis of 1,836 Bundesliga matches allowed me to conclude three main findings:

First, I found that defensive positions are more important to winning than offensive positions. While this might seem surprising at first glance, I also found that the supply-demand ratio, which I defined as the number of different players that occupied a position on the field divided by how often a position was part of the starting lineup, was lower for defensive positions than for midfield and offensive positions. Underlying reasons could be that the required skillset to fill a defensive position might be more specific than for other positions or that there is a shortage of talents formed to fulfill these positions. The second finding is that positions on the left side of the field are more important to winning than positions on the right side of the field. These findings can be supported with the same logic as the first finding as there are much fewer left-footed players than right-footed players (Bryson et al., 2013). Therefore the talent for the positions that are mostly occupied by left-footed players, which are the positions on the left side of the field, becomes more unique, and therefore those positions are more important for organizational performance. While I cannot exclude the possibility that the contribution of an individual's position to organizational success can be explained by other mechanisms, the correlation with the supply-demand ratio raises an important question of whether the sequenced and rather static view of TM, as first identifying key positions, which differentially contribute to the organization's sustainable competitive advantage, and then filling these positions (Collings & Mellahi, 2009), is still valid when the availability of talent to fill positions has an impact on the importance of these positions. The implications on the definition of TM will be further discussed theoretical implications section. Last but not least, in Paper I, I find that the head coach, the manager of the team, makes a higher contribution to organizational success compared to most on-field positions. Still, it is less than the combined contribution of the eleven players of the starting eleven, which proves that leaders who come up with great plans can only improve the organizational performance with the help of "people who are 'on the field' implementing those plans" (Groysberg et al., 2019).

In Paper II, I empirically establish a link between TM and value creation and identify the first set of drivers of value creation from TM. Building on the theory of value for TM, I use a unique panel dataset of 59 organizations in professional European football, I found significant differences in abnormal value generation depending on talent pool turnover, size, and maturity of talents in the talent pool. With regards to benefits and downsides of talent turnover, most downsides are discussed and benefits are only embraced by a few scholars (Sharma, 2021). I find that the turnover of talent in the talent pool leads to higher abnormal value generation with a quadratic relationship between turnover and abnormal value generation. While there are many mechanisms, which are similar to other industries, there is an advantage for organizations to generate value from TM in professional football compared to other industries. In professional football, value protection as an important stage of value generation (Sparrow & Makram, 2015) is facilitated by regulations, such as the limited freedom for players to move to another club, which might strengthen the relationship between turnover and abnormal value creation in professional football. Investigating the size of the talent pool, I find that in professional football a smaller talent pool results in higher abnormal value creation as with a restrained number of development opportunities, there is less possibility for every talent to develop and generate organizational value when the talent pool size increases. Additionally, I find that a higher age of the talents in the talent pool results in lower abnormal value generation. With this result, I also confirm the inverted u-shaped relationship between age and a player's value presented by previous scholars (e.g., Bryson et al., 2013; Deutscher & Büschemann, 2016; Drut & Duhautois, 2017; Gerrard, 2001; Lucifora & Simmons, 2003; Serna Rodriguez et al., 2019), as the value creation is the first derivative of value, and extend it from the individual to the organizational level. Finally, I found that the transfer balance, which has been a control variable in the analysis has a significant positive impact on the abnormal value generation but is limited to the talent acquisition phase of the TM lifecycle (Schiemann, 2014). This motivated me to perform more research on the talent acquisition phase.

Therefore, and taking the implications of Paper I regarding the need for a more dynamic view of TM and identification and acquisition of talent and key positions into account, Paper III investigates value creation in the talent acquisition stage through the lens of DMCs of the acquiring manager. It builds on 1,307 player acquisitions and investigates the relationship between the three underpinnings of DMCs managerial cognition, managerial human capital, and managerial social capital, and the value creation of the acquisition. Value creation of the acquisition is measured through the acquisition premium, which is the difference between the purchase price and market value at the time of transfers divided by the purchase price. I find, that higher managerial cognition, which was measured as managerial attention leads to a reduction of acquisition premiums and therefore an increase in value generation. Additionally, and interestingly not in line with RBV theory, I found that higher managerial human capital can lead to lower value generation. Further investigating this link and building on agency theory and findings from Hayward and Hambrick (1997), I find that the managerial hubris of the manager who is responsible for the acquisition, moderates the relationship between human capital and value generation with higher hubris strengthening the negative relationship. Regarding the impact of managerial social capital on acquisition premiums and value generation from talent acquisition, I find that an increase in social capital reduces value generation from talent acquisition. This finding is in line with theory, as an increase in managerial social capital, which can provide “essential information about opportunities to acquire and integrate resources” (Blyler & Coff, 2003, p. 680), would only result in an acquisition if the non-public information about the target player results in an increased willingness to pay, while in the other case, a reduced willingness to pay would mainly result in an acquisition done by a different acquirer.

Overall, all three papers’ findings contribute to the TM literature by providing answers to the overarching and the three individual research questions. All three papers link TM to organizational success or value creation using different perspectives and methodologies. First,

Paper I applies an approach to empirically identify pivotal positions and demonstrates that the current definition of TM as a sequence of identifying key positions and then occupying them with incumbent candidates needs potentially to be revised, as there is evidence that the availability of talent relative to the demand for talent for a specific position influences the importance of the respective position. Second, Paper II parses out that the turnover in the talent pool, the talent pool size, and the maturity of talents in the talent pool matter for value creation through TM in professional football with higher turnover, smaller size, and lower maturity of talents resulting in higher value generation across the whole TM lifecycle. Finally, Paper III establishes that lower social capital and higher managerial attention lead to an increase in value generation in the talent acquisition stage, while higher managerial human capital combined with high managerial hubris can lead to lower value generation from talent acquisition.

5.2 Theoretical and Practical Implications

5.2.1 Theoretical Implications

The findings of this dissertation make several theoretical contributions to the growing literature on TM and are the first empirical pieces of evidence to link TM and value creation through TM.

First, they provide the methodological and theoretical basis for future research which aims to investigate the relationship between TM and organizational outcomes.

Second, the findings in Paper I give guidance that there is an interdependency between the availability of talent to fulfill a specific position and this position's importance for organizational success to generate a sustainable competitive advantage. Therefore, I propose to slightly adopt the widely used definition of TM into "activities and processes that involve the systematic identification of key positions which differentially contribute to the organization's sustainable competitive advantage [or face a shortage of available talent], the development of a talent pool of high potential and high performing incumbents to fill these roles, and the

development of a differentiated human resource architecture to facilitate filling these positions with competent incumbents and to ensure their continued commitment to the organization” (Collings & Mellahi, 2009, p. 304).

Third, my research empirically establishes the missing link between TM, rooted in the RBV, and value creation. I therefore empirically fill the gap of the “dearth of empirical evidence to support the many implicit value claims (found in both academic and practitioner literature) that suggest that talent management is a source of sustained competitive advantage and value creation” (Makram, 2021, p. 75).

Fourth, while talent retention is a key objective of most TM programs (Collings & Mellahi, 2009) and is considered one of the critical activities of TM (Thunnissen & Gallardo-Gallardo, 2019), my research shows that the potential benefits of talent turnover are only insufficiently incorporated in the field of TM research, which is often still operating with the notion of attraction, development, and retention as key objectives (Collings & Minbaeva, 2021).

Fifth, my research has also implications for the DMC literature. Being amongst the first ones to incorporate the three underpinnings of DMCs into one empirical analysis, I also show that all three underpinnings jointly impact how managers induce strategic change to the resource base into an organization. Therefore, I contribute to the understanding of DMCs and towards answering the questions about which underpinnings matter most and under which conditions (Helfat & Martin, 2015) by showing that managerial human capital can lead to an increase in risk-taking and is not always a source of value creation and managerial capability as many scholars assume.

5.2.2 Practical Implications

The findings of this dissertation have practical implications for applying TM and for building TM architectures. First, it highlights the importance of continuously implementing and improving an organization’s TM practices, as it can be a source of organizational value creation

and a sustainable competitive advantage. Second, TM programs should not only focus on positions that have by definition the highest impact on organizational success but also take into account the availability of talent and build a pool of potential incumbents for positions with rare talent supply. Likewise, the focus should not only be on positions on the managerial level but there might as well be positions on the non-managerial level that are more crucial to the organizational performance than the position of the responsible manager. Additionally, TM architectures should take into account the potential benefits of turnover and include i.e. measures to get rid of poor performers or embrace turnover to reply to environmental changes. When designing a TM program, practitioners should also ensure that development opportunities are scalable, as if this is not the case, the limit in development opportunities could limit the size of a talent pool or result in the stagnation of the talents' capabilities. Organizations should also pay attention to the capabilities and managerial human capital, social capital, and attention of a manager that is responsible for hiring new talents. High managerial human capital can – exacerbated by managerial hubris – result in high talent acquisition costs (e.g., salary, the cost for headhunters). The same holds true for high managerial social capital, which is why organizations should have measures in place to distribute decision power for the acquisition of talents to avoid that individual hubris or goodwill resulting from social ties to potential incumbents results in exorbitant talent acquisition costs.

Finally, managers should continuously challenge conventional wisdom by using advancements in technology and available methods of data analysis, as this can, if applied to a suitable and impactful business problem, generate new insights that might offer a competitive advantage.

5.3 Future Research Directions

While the findings of this dissertation contribute to the understanding of how TM can be a source of value creation and organizational success, several limitations need to be acknowledged and offer avenues for future research in the field of TM.

First, with the link between TM and value creation established, this definition only identifies an initial set of TM antecedents of value creation. There will be much more and consequently, there is an enormous potential for future research on the way towards a complete picture of how TM drives organizational value creation. Instead of borrowing from asset management research, scholars could try to apply other lenses, learn from other management disciplines, and could i.e. use DMCs to investigate the talent managers' impact of managerial characteristics on value creation from TM. This links to the second limitation, being that a dynamic view of TM has only been applied in Paper III to only one stage of the TM lifecycle. There are many sources of dynamism within or related to TM, which can be clustered in the dynamism of individuals, such as movement in and out of the talent pool, and dynamism of the environment, which necessitates organizations to make changes also to their resource base (Sharma, 2021) and potentially focus on different capabilities for talents to develop. And third, while professional football is a useful setting to investigate TM and value generation as an outcome of TM, it has limitations. I recognize that it is a unique setting and to transfer the approach to other industries with lower transparency on talent value or less frequent organizational outcomes might be challenging. Nonetheless, I am convinced that some aspects and approaches used within this dissertation will help to transfer findings to other industries and assess similar problems. Scholars could try to develop an approach to constantly value the talents of different organizations in longitudinal studies which would significantly decrease the challenge of assessing the impact of TM processes on organizational outcomes and value creation. Therefore, even if professional football is a specific research context, scholars that

investigate other industries might learn from what facilitated some aspects of data collection and analysis, and find a way to transfer it to other industries.

Overall, I would welcome to see these transfers done as it would foster the growth in the research stream of TM and improve its theoretical and especially empirical foundations. By doing so, researchers can provide more actionable guidance for managers on how to implement TM to create value and improve organizational outcomes.

Finally, seen from an employee perspective this can only be beneficial to the workforce, as achieving a sustainable competitive advantage will require a continuous improvement in TM processes and architectures, from which talents will benefit. And while Somaya and Williamson (2011, p. 75) wrote “Perhaps it is time to declare that the war for talent is over ... talent has won!”, I would rather say as long as the race for talent is going on, talent will always win!

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