The Individual and Synergistic Impact of Team Diversity on Team Performance in the Context of European Soccer

by

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Abstract

As a global industry, the field of professional sport mirrors the trend towards increasing levels of team diversity observed in the general workforce. Professional sports not only reflect workforce changes in various industries but also provide an advantageous context for conducting organizational research, including studies related to diversity issues. Therefore, using European soccer as a research context, this dissertation investigates the influences of two forms of team diversity, as well as their combined effects with other diversity features, on the final overall performance of individual teams. Additionally, in all three papers, multiple boundary conditions are identified through moderator exploration and construct refinement, enhancing the depth of the research. The first paper examines the effect of soccer players' cultural diversity in terms of nationality on national teams' performance. The estimation results from a dataset encompassing European national teams between 2004 and 2019 suggest cultural diversity positively contributes to on-field team performance and team members' shared tenure can amplify this positive relationship. The second paper explores how different components of players' salary dispersion affect team performance within the context of the English Premier League from the 2013/14 to 2019/20 season. Estimation results from different methods indicate differences regarding explained and unexplained pay dispersion in relation to individual team's sporting success. Furthermore, depending on team composition, explained pay dispersion can exert a moderating effect on the relationship between pay level and team performance. The third paper adopts a team faultlines perspective and studies how the alignment of surface- (age, race, nationality) and deep-level diversity (pay dispersion) affects team sporting success. Through analyzing a dataset of the

Italian Serie A spanning from the 2013/14 to 2019/20 season, the study uncovers a

detrimental impact of team faultlines strength on team performance. However, the negative

impact is mitigated by shared team tenure, and this mitigation is further amplified by leaders'

multicultural experience.

Preface

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Chapter 1

Introduction

Two intertwined phenomena, team-based structures and increased workforce diversity, became a feature of modern organizations over the course of the past 50 years (van Knippenberg & Mell, 2016). Teams gradually became the backbone of modern-day organizations, making it easier for them to leverage their human capital while addressing complex tasks (Mathieu et al., 2019; van Knippenberg & Mell, 2016). At the same time, globalization and internationalization led to increasingly diverse teams in terms of demographics, skills, functional backgrounds, and other attributes (van Knippenberg & Mell, 2016). Team diversity encompasses a wide range of differences among individuals within the teams. Harrison and Klein (2007) defined diversity as the "distribution of differences among the members of a unit with respect to a common attribute, X, such as tenure, ethnicity, conscientiousness, task attitude, or pay" (p. 1200). Over the years, organizational researchers and practitioners dedicated significant efforts to comprehending and managing the relationship between team diversity and team performance (Roberson, 2019; van Knippenberg & Mell, 2016).

Team diversity is often considered a "double-edged sword" when applied in practice (Horwitz & Horwitz, 2007, p. 988; Milliken & Martins, 1996, p. 403). Some scholars viewed team diversity as a resource pool of information, perspectives, and skills that can be capitalized to facilitate tasks, and in turn, enhance team performance.[1] Conversely, within the frameworks of social categorization [i.e., social identity theory, self-categorization theory

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[1] See Cox and Blake's (1991) value-in diversity hypothesis along with Mannix and Neale (2005) and Williams and O'Reilly's (1998) information/decision making lens as examples.

(Tajfel, 1978; Tajfel & Turner, 1979; Turner, 1987)], and similarity-attraction (Byrne, 1971) lenses, greater levels of team diversity result in interpersonal tensions and intergroup biases (Mannix & Neale, 2005; van Knippenberg et al., 2004) impairing team processes and performance.[2]

Scholars from different research areas emphasized the importance and benefits of matching the conceptualization and operationalization of diversity (Harrison & Klein, 2007). In doing so, they explored the moderating effects of other variables (e.g., Harrison et al., 2002; Harrison & Klein, 2007), explicated the basis of certain type of diversity (e.g., Shaw, 2014; Trevor et al., 2012), and aligned different diversity characteristics (e.g., Bezrukova et al., 2009; Lau & Murnighan, 2005) while examining the relationship between team diversity and team performance. Studying organizational phenomenon within sporting contexts provides researchers with advantages that are infrequently found in non-sport domains and allows them to answer research questions that are not easily examined in other contexts (Szymanski et al., 2021). For example, the abundance, objectivity, availability, and comparability of sport data at both team and individual level (especially elite and professional team sports) in terms of performance, records, statistics, salary, etc., enable researchers to conduct relevant studies more easily. Surprisingly, research conducted in the field of sport management rarely incorporate the above-mentioned factors and methods (Cunningham & Ahn, 2019; Emich et al., 2020) when investigating the relationship between team diversity

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[2] Lee and Cunningham (2019) stated "the focus is on how differences among members of a group–whether a team, exercise group, or sport organization–are associated with subsequent outcomes for that social unit" (p. 142). Following the same approach, "group", "team", or "organization" may be used interchangeably throughout this dissertation.

and team performance despite professional sports being an appropriate research context for studying this topic (Day et al., 2012; Wolfe et al., 2005).

To fulfill the three-paper dissertation format set forth by the Faculty of Kinesiology, Sport, and Recreation and the Faculty of Graduate & Postdoctoral Studies, this dissertation explores three distinct, yet interconnected research questions within the overarching theme of the relationship between team diversity and team performance. The overall purpose of the dissertation is to investigate the influences of two forms of team diversity, as well as their combined effects with other diversity features, on the final overall performance of individual teams. The subsequent sections of Chapter 1 consist of a concise discussion concerning team composition, followed by the potential reasons behind the inconclusiveness within existing research on the team diversity–team performance relationship. Next, there is a brief introduction to the concept of team faultlines. Additionally, this chapter explores the mechanisms through which team diversity may impact team final outcomes and discusses the legitimacy of conducting diversity research within the context of professional sports. Finally, Chapter 1 concludes with a succinct comparison between major North American professional sports leagues and European soccer leagues.

In terms of the dissertation papers, Chapter 2 investigates the effect of soccer players' cultural diversity on national teams' performance and the moderating effect related to shared team tenure. Within the literature, shared team tenure can be viewed as a proxy of tacit knowledge (Berman et al., 2002) and interaction among team members (Harrison et al., 1998; Harrison et al., 2002). Chapter 3 examines how different components of players' salary dispersion affect team performance (Trevor et al., 2012). Chapter 4, building upon the

perspective of team faultlines (Lau & Murnighan, 1998), studies how the alignment of surface- and deep-level diversity affects team sporting success. It also investigates the moderating influences of team members' shared tenure and leaders' multicultural experience. Chapter 5 provides a broad conclusion and offers suggestions for future research on related topics in the field of professional sports.

1.1 Team Composition

According to Kozlowski and Ilgen (2006), a team can be defined as

(a) two or more individuals who (b) socially interact (face-to-face or increasingly, virtually); (c) possess one or more common goals; (d) are brought together to perform organizationally relevant tasks; (e) exhibit interdependence with respect to workflow, goals, and outcomes; (f) have different roles and responsibilities; and (g) are together embedded in an encompassing organizational system, with boundaries and linkages to the broader system context and task environment (p. 79).

Although teams can assume various forms and serve different purposes, they play a central and vital role in our everyday lives (Dinh & Salas, 2017; Kozlowski & Ilgen, 2006; Mathieu et al., 2008). Thus, in conjunction with the widespread adoption of teams in organizational settings, scholarly interest has been in exploring team performance, with team composition recognized as a potential mechanism affecting it (Bell, 2007; Lee & Cunningham, 2019).

Team composition, referring to the configuration and combination of members' different attributes, plays a significant role in affecting the emergence of affective states, behavioral processes, and cognitive states within the teams that, in turn, influence final team performance (Bell et al., 2018; Dinh & Salas, 2017; Levine & Moreland, 1990).

When making decisions on forming teams, Wageman et al. (2005) proposed three fundamental factors, including having clear boundaries, shared purposes, and moderate stability. While these three elements delineate "what" categorizes a team, another important question is "who" makes up and contributes to the team (Dinh & Salas, 2017; Mathieu et al., 2014). Team members are idiosyncratic considering their competencies and other traits (e.g., demographics and personality). Specifically, when an individual becomes a member of a team, "she brings knowledge, skills, and abilities that yield a certain fit with the position and role(s) that she occupies. She also brings a set of team-oriented knowledge, skills, and abilities, and her features contribute to a multitude of diversity and other team profiles" (Mathieu et al., 2014, p. 150).

It is evident that different types of teams are comprised of people who take various roles, bring their task-related knowledge, skills, abilities (KSAs), and other traits to work collectively and achieve shared goals. Using the 2004 U. S. Men's Olympic basketball team as an example, Mathieu et al. (2014) argued simply recruiting the most competent individuals may not always lead to the highest team performance. Thus, to select appropriate team members to effectively accomplish team tasks, attention should be given not only to personal competencies or KSAs but also to other characteristics, including team members' diversity in various features (Cannon-Bowers & Bowers, 2011; Mathieu et al., 2014, 2019).

While the success of individual teams depends on various factors, a team's compositional features, among which team diversity assumes a unique position, play a crucial role (Mathieu et al., 2014, 2019). Consequently, not only do individual team members' KSAs or competencies matter in influencing team performance (Wageman et al., 2005), but also

team members' differences in various attributes (e.g., demographics, personality, values) may significantly change existing team profile and structure, ultimately affecting team performance (Bell, 2007; Mathieu et al., 2008; Wolfson & Mathieu, 2017). In the meantime, based on the input–process–output (McGrath, 1964) and input–mediator–output–input (Ilgen et al., 2005) framework, it is believed that diversity among team members as an important team-level input and antecedent can impact team processes and emergent states, which subsequently influence final team outcomes (Dinh & Salas, 2017; Mathieu et al., 2014, 2019).

In summary, team composition is a multifaceted aspect that includes diverse attributes of individual members. While individual competencies are crucial for teams, diversity in team members' features also plays a pivotal role in influencing team processes and, consequently, team performance.

1.2 Reasons for Inconclusiveness in the Extant Diversity Literature

Over the past few decades, researchers from various fields dedicated considerable effort to studying diversity. However, the collective findings concerning the influence of team diversity on team performance are mixed or even inconclusive.

1.2.1 Mismatch of Diversity Conceptualization and Operationalization

Members within the same team may exhibit differences in surface- and deep-level diversity. Surface-level diversity refers to heterogeneity in overt demographic characteristics such as age, sex, and race. In contrast, deep-level diversity reflects individual variances in attitudes, beliefs, and values (Harrison et al., 1998; Lee & Cunningham, 2019). The failure of matching conceptual foundations to varying research contexts (including professional sports) as well as

the mismatching of operational measures for different types of diversity led to inconsistent findings within the team diversity–performance literature (Harrison & Klein, 2007).

In the hope of reconciling inconclusive outcomes and bringing robustness to future empirical studies, Harrison and Klein (2007) proposed a holistic construct and consistent measurements of diversity, which have been widely adopted in diversity-related studies since their introduction (Roberson, 2019). To be specific, instead of considering team diversity as a one-dimensional concept, Harrison and Klein (2007) categorized team diversity into three types: *separation, variety,* and *disparity*. Table 1.1 provides an overview of Harrison and Klein's (2007) diversity typology.

They defined *Separation* as a "composition of differences in (lateral) position or opinion among unit members" (Harrison & Klein, 2007, p. 1203). Some examples of this type of diversity include a value, belief, or attitude regarding team goals and processes. The predicted effect related to separation diversity can be explained by both the social categorization perspectives (Tajfel, 1978; Tajfel & Turner, 1979; Turner, 1987) and similarity-attraction paradigm (Byrne, 1971). According to the social categorization perspectives (comprised of social identity theory and self-categorization theory), individuals categorize themselves and other members into "us" (in-group) and "them" (out-group) based on a variety of individual attributes such as gender, race, educational background (e.g., I see myself as a male Chinese Ph.D. student).

Once someone categorized others, individuals are motivated to treat in-group members with more trust and positive views than out-group members. In an analogous manner, similarity-attraction paradigm posits people are attracted to and inclined to interact

with those individuals they perceive similar based on different characteristics (e.g.,

demographic features, personal beliefs). This attraction process further distinguishes between

in-group and out-group as well as influences intergroup interactions. Accordingly, a higher

level of separation diversity is expected to be negatively related to team performance, as it

reduces team cohesiveness and increases interpersonal conflicts between subgroups (Harrison

& Klein, 2007; van Knippenberg et al., 2004). In terms of measuring separation diversity,

standard deviation and mean Euclidean distance are preferred indicators, since measuring

separation is most effectively achieved by accumulating the absolute or squared distances

between pairs of individuals at the unit level. (Harrison & Klein, 2007).

Variety refers to a "composition of differences in kind, source, or category of relevant

knowledge or experience among unit members" (Harrison & Klein, 2007, p. 1203). Team

members' functional background and industry experience are instances of diversity described

in this form (Bell et al., 2011; Harrison & Klein, 2007). According to information/decision-

making theory, differences among team members may bring varied ideas, skills, perspectives,

and knowledge to the team (Williams & O'Reilly, 1998) and "broaden[s] the cognitive and

behavioral repertoire of the unit" (Harrison & Klein, 2007, p. 1024). Subsequently, in

general, increased level of variety may contribute to enhanced team performance. To

operationalize variety diversity, Harrison and Klein (2007) recommended the Blau index and

Teachman index as appropriate measures since variety diversity assumes differences among

individuals on categorical attributes.[3]

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[3] The Blau index, also known as the Hirschman-Herfindahl index, is calculated as $1 - \sum p_k{}^2$, and the computational formula for the Teachman index is $-\sum p_k \cdot \ln(p_k)$. In both formulas, p is the proportion of unit members in k^{th} category.

Disparity is a "composition of (vertical) differences in proportion of socially valued assets or resources held among unit members" (Harrison & Klein, 2007, p. 1203). Harrison and Klein (2007) reference salary dispersion (i.e., pay or income inequality) as one commonly cited example of this type of diversity. As it pertains to the effect of disparity on team performance, salary dispersion is context-specific. For example, if the disparity is "legitimate and justifiable for teams' coordination demands" (Li et al., 2018, p. 958), then it can be associated with improved performance and vice-versa (Harrison & Klein, 2007; Li et al., 2018). Disparity diversity can be proxied by the coefficient of variation and the Gini coefficient as both measures reflect the asymmetry (concentration) of resources acquired by different team members (Harrison & Klein, 2007).

When investigating the potential influences of team diversity on workforce performance, it is essential to clarify various forms of diversity and their respective measures, as different conceptualizations of team diversity led to different operationalizations (Bell et al., 2011). According to Harrison and Klein (2007), age diversity in a team can be conceptualized either as *variety* (e.g., different age groups may have varied values) or *disparity* (e.g., senior members may have higher status than younger counterparts) depending upon research contexts and underlying theories. Subsequently, the measures of one diversity type can be varied depending on different constructs.

Table 1.1 Overview of Diversity Typology

Diversity Type	Definition	Possible Underlying Theory(ies)	Examples	Measurements	Predicted effects to team performance
Separation	Composition of differences in (lateral) position or opinion among unit members, primarily of value, belief, or attitude; disagreement or opposition	Social categorization theories; similarity-attraction paradigm	Value, belief, attitude	Standard deviation; Mean Euclidean distance	A higher level of separation diversity is negatively related to team performance
Variation	Composition of differences in kind, source, or category of relevant knowledge or experience among unit members; unique or distinctive information	Information /decision-making perspective	Nationality diversity, experience	Blau index; Teachman index	Increasing level of variation is positively related to team performance
Disparity	Composition of (vertical) differences in proportion of socially valued assets or resources held among unit members; inequality or relative concentration	Tournament theory; equity theory	Salary dispersion, status	Coefficient of variation; Gini coefficient	Contingent upon the legitimacy of disparity

Source: Adapted form Table 1 (p. 1203) and Table 2 (p. 1210) in Harrison and Klein (2007).

1.2.2 Inattention to Boundary Conditions

Another reason with respect to the inconsistent results observed in the literature on the team diversity–team performance relationship beyond the mismatch of the conceptualization and measurement of a specific diversity type is the inattention to boundary conditions which are defined as ''who, where, when'' aspects of a theory (Whetten, 1989). Researchers proposed different ways to potentially reconcile the inconclusive empirical results in the field, such as a matching conceptualization and operationalization of specific diversity (Harrison & Klein,

2007) and the Categorization–Elaboration Model (van Knippenberg et al., 2004). Indeed, researchers demonstrated team diversity, regardless of its form, can either facilitate or impede team final outcomes. However, what is less known from the literature are the contextual factors that determine when the positive or negative effect is more likely to emerge (Guillaume et al., 2017). In other words, establishing boundary conditions is a critical challenge permeating all domains of organizational research (Busse et al., 2017; Cunningham & Ahn, 2019; Harrison & Klein, 2007).

Theories in social sciences are not applicable without the consideration of contexts (Busse et al., 2017). Boundary conditions, as an important element in theory development, refer to the "who, where, when" aspects of a theory (Whetten, 1989). A signal for scholars to explore boundary conditions is the contradictory empirical results existed in a field of study (Busse et al., 2017). This principle justifies the exploration of boundary conditions within the literature of team diversity research. Therefore, in the following three papers, boundary conditions are explored in relation to the team diversity–team performance relationship with the aim of further advancing a theory, enhancing its validity, and bridging the research–practice gap (Busse et al., 2017).

1.3 The Concept of Team Faultlines

The existing literature exploring the effects of team diversity on performance provides inconclusive results, demonstrating that different types of diversity yield either positive or negative effects on team performance (Guillaume et al., 2017; van Knippenberg & Schippers, 2007; Williams & O'Reilly, 1998). Given that individuals within a team often exhibit diverse personal characteristics such as gender, age, and nationality, researchers endeavored to

examine how these intersecting dimensions of diversity impact team dynamics by embracing the concept of "team faultlines." Adapted from the field of geography, team faultlines in diversity research refer to "hypothetical dividing lines that may split a group into subgroups based on one or more attributes" (Lau & Murnighan, 1998, p. 328).

Directing future agendas for team diversity research, Stahl and Maznevski (2021) maintained researchers must look beyond one source of diversity within heterogeneous teams. Indeed, a burgeoning body of literature initiated this trend by adopting the perspective of team faultlines (Liu et al., 2019; Meyer et al., 2014). Although sharing similar theoretical foundations (i.e., the social categorization perspective and similarity-attraction paradigm) with diversity research that examines single-attribute measures of team heterogeneity, team faultlines studies investigate the alignment of multiple dimensions of team diversity simultaneously and capture the resultant effects (Lau & Murnighan, 2005; Thatcher & Patel, 2012). Contrary to the mixed main effects associated with single-attribute measures of diversity on team performance, in general, the main effects of team faultlines are detrimental to final outcomes (Liu et al., 2019; Mathieu et al., 2019; Thatcher & Patel, 2012).

According to some scholars (e.g., Shin & You, 2023; van Knippenberg & Schippers, 2007), the prevailing approach to investigating team diversity, which concentrates on single attributes of team members (e.g., age, race), neglects the simultaneous consideration of various forms of individual differences. In contrast, studies involving the perception of team faultlines investigate how the alignment of different diversity sources (e.g., age, gender, nationality, educational background) affects team processes and performance (Bezrukova et al., 2009).

According to the concept of team faultlines, as shown in Table 1.2, teams with the same level of diversity may vary in terms of team faultlines strength, defined as the degree of alignment of different attributes among group members (Lau & Murnighan, 1998). For example, a 20-player soccer team comprised of ten German players in their 20s and ten Brazilian players in their 20s would have a strong faultlines strength based on nationality and age (i.e., a moderately diverse team). By contrast, a 20-player soccer team comprised of 20 German players who are all 25-years old would have very weak faultlines strength based on nationality and age (i.e., a homogeneous team). Furthermore, as noted in Lau and Murnighan's (1998) example, teams with the same level of diversity may vary in terms of team faultlines strength, indicating the alignment of differences between members may provide more insight into how team heterogeneity impacts team processes and outcomes (Bezrukova et al., 2009; Lau & Murnighan, 2005).

Recall from the earlier discussion on team composition, it is obvious that different forms of diversity may exist within modern teams, as individuals with various backgrounds, expertise, and values come together to work towards common goals. For instance, one type of team heterogeneity is team members' cultures/nationalities, which is readily observable and can fit into *variety* diversity. Moreover, as a representative of deep-level diversity, pay dispersion is conceptualized as *disparity* diversity. The three papers in the present dissertation focus on the understanding how these two types of team diversity and their alignment with other demographic attributes (e.g., age, race) affect team performance in a highly interdependent work setting (i.e., soccer).

Table 1.2 Comparison of Diversity and Faultline Strength

Group Number	Member A	Member B	Member C	Member D	Diversity Measure	Faultline Strength
1	White Male 20 Sales	White Male 20 Sales	White Male 20 Sales	White Male 20 Sales	None	None
2	White Male 20 Sales	White Female 30 Sales	Asian Female 25 Sales	Asian Male 20 Sales	0.17	Weak
3	White Male 50 Plant manager	White Male 55 Plant manager	Black Female 31 Clerical staff	Black Female 35 Clerical staff	0.23	Very strong
4	White Male 50 Plant manager	White Female 31 Clerical staff	Black Male 55 Clerical staff	Black Female 35 Plant manager	0.23	Weak

Source: Adapted form Table 1 in Lau and Murnighan (1998, p. 330).

1.4 Mechanisms of Team Diversity Affecting Team Performance

Davis (2006) emphasized the importance of theoretical mechanisms in organizational research, since "mechanisms provide a lingua franca, a common set of ideas that can be drawn on, refined, and elaborated without the heavy drama of battling ersatz theories" (p. 117). To be specific, the mechanisms for diversity research may operate from micro to macro (i.e., transformational mechanism; Davis & Marquis, 2005), implying differences at the individual level can affect outcomes at the team/organizational level.

The first dissertation paper seeks to understand the relationship between individual's cultural diversity and team performance by analyzing datasets from national soccer teams. According to the information/decision-making theory, individuals' national/cultural diversity may be positively related to team performance (i.e., individual-level differences aggregated

to team-level outcomes; Davis, 2006). The underlying mechanism for this positive relationship comes from a broader range of cultural/country-specific knowledge, skills, and perspectives unique or complementary to the team's tasks associated with team members' cultural heterogeneity in multinational teams. However, from the perspective of social categorization and similarity-attraction paradigms, the same type of diversity (i.e., national/cultural diversity) may impair team performance, as people working in teams tend to categorize themselves and others into ingroups and outgroups based on differences and similarities between "us and them". As a result, individuals tend to favor members of ingroups, trust them more, and be more willing to cooperate with those with whom they share similarities.

In dissertation paper 1, the direction of the key variable of interest (i.e., cultural diversity) cannot be predicted due to mixed empirical results. Thus, the approach taken is to explain its impact through mechanism-based theoretical work, following the framework proposed by Davis and Marquis (2005). An overlooked mechanism regarding the relationship between cultural diversity and team performance may be related to shared team tenure. To be specific, members from culturally heterogenous teams may need more time than their counterparts from cultural homogeneous teams to interact and communicate to remove any potential biases and stereotypes resulted from readily observed dissimilarities (e.g., race, nationality). The length of time team members spend together may reduce the negative effects related to surface-level diversity (e.g., nationality) on team performance, since individuals gain more experience of working and collaborating with each other over time (Harrison et al., 1998, 2002). Therefore, when team members spend more time together, it is

plausible they noticed their initial stereotypes or biases about "outgroup" members were incorrect. Consequently, the negative effect, if any, resulting from previous social categorization and/or similarity-attraction processes may decrease (van Knippenberg & Schippers, 2007). In addition, shared team tenure can be a proxy of team members' tacit knowledge, which is "stored in the individuals' cognitive schemata and is hard to express" (Hadjimichael & Tsoukas, 2019, p. 677). The longer the team members work together, the more they can learn from each other. Taken together, team members' shared tenure may be a critical (missing) mechanism through which the positive effects associated with diversity on team performance can be achieved. Hence, the linkage and integration of team diversity and tacit knowledge may lead to a general theory in the field (Glynn & Raffaellli, 2010).

In paper 2, I focus on the effects associated with *(un)explained* pay dispersion on team performance in an interdependent work setting (i.e., soccer). As prior empirical studies examining the impact of *unconditional* pay dispersion, which fails to take individual differences into consideration (Kahane, 2018), generated mixed results, it seems that pay dispersion *per se* is neither functional nor dysfunctional (Shaw et al., 2002). Thus, the underlying mechanism regarding the pay dispersion–team performance may be linked to the basis of pay or the legitimacy of pay dispersion (Shaw, 2014; Trevor et al., 2012). On the one hand, the legitimized part of pay dispersion (i.e., can be explained by individual performance) should motivate current team members to achieve higher performance so that they can receive higher rewards. Meanwhile, high-performing individuals may be attracted to teams where pay-for-performance system is in effect (i.e., pay dispersion can be explained by the differences of individual performance). In both ways, dispersed pay may enhance team

performance. However, individuals may interpret non-performance-based pay dispersion (e.g., politics) as inequitable, which is thought to lower motivational levels and make attracting high-performing employees more difficult (Downes & Choi, 2014). Thus, the legitimacy of pay dispersion possibly provides the mechanism through which different parts of pay dispersion act in different ways in terms of affecting team performance.

Given the current demographic shifts and migration patterns, the interaction of surface- and deep-level diversity warrants further exploration. Therefore, in paper 3, the focus centers on examining the synergetic effect of surface- and deep-level diversity from the lens of team faultlines. As the concept of team faultlines emphasizes the alignment of various types of diversity, the underlying mechanisms may encapsulate those explaining papers 1 and 2. In terms of surface-level diversity attributes (i.e., age, race, and nationality in my case), they are more salient and can be easily observed by team members. As a result, identity-based subgroups may be formed (Carton & Cumming, 2012), which have been demonstrated to be negatively related to team performance (Bezrukova et al., 2016) from the perspectives of social categorization and similarity-attraction theories.

As it relates to deep-level diversity, pay dispersion is chosen as the representative because hierarchical pay structure within a team may influence team members' values and/or beliefs (Lambert & Bell, 2013; Pfeffer & Langton, 1993), which may in turn affect individual and overall team performance negatively if team members perceive the disparities are inequitable (Shaw, 2014). Since different types of team faultlines can coexist within the same team and cause multiple subgroup types, demographic features may create identity-based subgroups while differences in pay may elicit resource-based subgroups (Carton &

Cummings, 2012). At the same time, when various types of subgroups emerge, it is possible that team outcomes can be influenced by multiple inter-subgroups processes simultaneously (Carton & Cummings, 2012). Therefore, the mechanisms through which team faultlines comprised of surface- and deep-level team heterogeneity affect team performance may be captured.

1.5 Sports as a Research Context

As a global industry, the field of professional sport echoes the trend towards increasing levels of team heterogeneity observed in the general workforce (Lee & Cunningham, 2019). Within the sporting context, the meta-analysis conducted by Lee and Cunningham (2019) invested how team diversity affected subsequent team performance and whether the observed relationships varied depending on a variety of moderators. At the end of their analysis, Lee and Cunningham (2019) noted more work is necessary to investigate whether team diversity attributes were influenced by managerial decisions. Using European soccer as the research context, my dissertation focuses on the diversity issues related to member recruitment (i.e., cultural diversity) and remuneration system (i.e., pay dispersion) by drawing on theories from mainstream management and economic research.

Early research by Schmidt and Berri (2003) focused on the global search for talent in five North American sports: baseball, basketball, football, hockey, soccer. They found competitive balance, defined as the equal playing strength among league members (Forrest & Simmons, 2002), improved with an increase of the percentage of foreign-born players within the sports (Schmidt & Berri, 2003). More recent research by Schmidt (2021) focused exclusively on the history of Major League Baseball (MLB) and provided evidence of a

similar relationship between competitive balance and the percent of foreign-born players in the league. Further, he noted "… drawing players from a more diverse, and by definition larger, labor pool will increase the level of competitive balance initially but the return to the larger pool eventually diminishes and ultimately yields no further benefits" (Schmidt, 2021, p. 418). In the end, his research provided broad support for a more diverse workforce.

Two other features of sports team diversity are cultural diversity (i.e., players nationality) and pay dispersion (Gelade, 2018), with the former demographic heterogeneity representing an example of surface-level diversity, which can be readily observed by team members (Harrison et al., 1998), and the latter being categorized as a form of deep-level diversity (Lambert & Bell, 2013; Pfeffer & Langton, 1993), as deep-level diversity is latent and related to individuals' attitudes, values, and beliefs (Harrison et al., 1998). Cultural diversity, including diversity of nationality, is a pervasive phenomenon with respect to team composition in professional sports (Godfrey et al., 2020). Taking professional soccer as an example, both domestic league clubs and national teams are now recruiting an increasing number of players from different regions, making nationality a potentially more salient attribute than other demographic traits such as age (Poli et al., 2018; Richard & Miller, 2013). Specifically, in European soccer leagues, the number of non-domestic players recruited by individual clubs increased since the "Bosman ruling" in 1995.[4] For instance, Table 1.3 illustrates player demographics for Chelsea FC, an English Premier League (EPL) team, in the 2021/22 season.[5] As presented in the table, despite being an English soccer club, only

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[4] The ruling eliminated the transfer fees for players who are out of contract with their old teams and wish to move to new teams within and between European Union (EU) countries. It also removed the restrictions on the number of foreign players who can play for a team (Binder & Findlay, 2012).

[5] The information was collected from *Transfermarkt* (www.transfermarkt.com), which is a German-based website that offers soccer-related information, such as scores, results, statistics, transfer news, and fixtures.

one-third (8 out of 24) of Chelsea FC players on the roster have English nationality, whereas nearly 50% (11 out of 24) have dual citizenship. This trend is not limited to clubs and extends to national teams as well. At the 2018 FIFA Men's World Cup, 84 out of the 736 players competed while wearing a national jersey that did not represent their country of birth (van Campenhout & van Sterkenburg, 2021). In addition to more culturally diverse team compositions, within-team remuneration structures became increasingly diverse, as star players garner increasing salaries (Jones, 2019). For instance, FC Juventus signed Cristiano Ronaldo in 2018, paying him the second-highest salary in the soccer world at € 31 million per year. This amount was four times that of any other player in the division in that season (Jones, 2019).

Not only do professional sports mirror workforce changes in generalized industries, but they also offer an advantageous context for conducting organizational research, including studies related to diversity issues (Lee & Cunningham, 2019; Szymanski et al., 2021; Wolfe et al., 2005). More importantly, the "living laboratory" (Day et al., 2012, p. 399) provided by a sport setting can benefit research focusing on the issue of diversity and team-based outcomes in organizations in the general workforce (Wolfe et al., 2005). In addition, the ideas of competition and cooperation are the core concerns both in organizational and sporting settings (Day et al., 2012). Thus, it is reasonable to believe knowledge generated from research examining sport data and samples can be generalized to other organizations in general industries. Even though, to some extent, the generalizability of outcomes generated from sporting context may be constrained due to its simplicity, this vein of research still provides a type of conservative test or "wind tunnel" test (Kahn, 2000; Wolfe et al., 2005). In

other words, if an expected relationship cannot be observed in sport setting, then it is highly

unlikely that it could be detected under more complicated circumstances.

As Roberson (2019) claimed, the field of diversity research benefits from studies

conducted in settings other than in typical business industries (e.g., accounting, factory,

finance). Therefore, by analyzing datasets from professional soccer, the proposed research

seeks to investigate the influences associated with different forms of team diversity on teams'

on-field performances and attempts to provide theoretical contributions as well as practical

implications.

Table 1.3 Chelsea FC Players' Demographic Information in the 2021/22 Season

Player Name	First Nationality	Second Nationality	Country of Birth	Date of Birth
Jorginho	Italy	Brazil	Brazil	20-12-1991
Christian Pulisic	United States	Croatia	United States	18-09-1998
Romelu Lukaku	Belgium	DR Congo	Belgium	13-05-1993
Thiago Silva	Brazil	France	Brazil	22-09-1984
Callum Hudson-Odoi	England	Ghana	England	07-11-2000
Edouard Mendy	Senegal	Guinea-Bissau	France	01-03-1992
Ruben Loftus-Cheek	England	Guyana	England	23-01-1996
N'Golo Kanté	France	Mali	France	29-03-1991
Hakim Ziyech	Morocco	Netherlands	Netherlands	19-03-1993
Antonio Rüdiger	Germany	Sierra Leone	Germany	03-03-1993
Trevoh Chalobah	England	Sierra Leone	Sierra Leone	05-07-1999
Mateo Kovačić	Croatia	N/A	Austria	06-05-1994
César Azpilicueta	Spain	N/A	Spain	28-08-1989
Marcos Alonso	Spain	N/A	Spain	28-12-1990
Andreas Christensen	Denmark	N/A	Denmark	10-04-1996
Mason Mount	England	N/A	England	10-01-1999
Kai Havertz	Germany	N/A	Germany	11-06-1999
Timo Werner	Germany	N/A	Germany	06-03-1996
Reece James	England	N/A	England	08-12-1999
Kepa Arrizabalaga	Spain	N/A	Spain	03-10-1994
Ben Chilwell	England	N/A	England	21-12-1996
Saúl Ñíguez	Spain	N/A	Spain	21-11-1994
Ross Barkley	England	N/A	England	05-12-1993
Marcus Bettinelli	England	N/A	England	24-05-1992

Source: www.transfermrkt.com.

1.6 A Comparison Between Major North American Professional Leagues and European Soccer Leagues

In contrast to the closed North American major league structure, in which membership of franchises is fixed every season, the major European soccer leagues are an open league system (Noll, 2003). This open system permits lower-division teams the opportunity to advance to higher divisions, while teams finishing at the bottom of the standings in the higher division are relegated to lower divisions (Noll, 2003). Additionally, individual teams' performance in the previous season's league standings can be a determining factor in their eligibility for concurrent tournaments in the following season (Noll, 2003). For example, top finishing teams from individual first-tier divisions will participate in several European-wide competitions organized by the Union of European Football Associations (UEFA) annually,[6] among which is the UEFA Champions League (CL). The CL is the most prestigious and participants in this tournament are compensated lucratively for both participating and advancing in the tournament (Pawlowski et al., 2010). For instance, in the 2018/19 season, in addition to securing their sixth CL title, Liverpool F.C. from the EPL, generated £264 million in broadcast revenue across all competitions (Deloitte, 2020).

Apart from the distinctions associated with open and closed league systems, several other differences exist between major North American professional sports leagues and European soccer leagues. First, contrary to franchises in North American major leagues that

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[6] Teams may concurrently participate in one or two domestic cup competitions (knockout tournament) in addition to the domestic leagues and pan-European tournaments organized by UEFA (the Champions League, Europa League, and European Conference League).

focus on maximizing profit instead of wins, European owners are considered win-maximizers (Fort, 2015) as sporting success is a major concern of clubs (Frick, 2007).

Second, European soccer leagues typically involve players being transferred between clubs, either domestically or internationally, with a cash payment known as a transfer fee, which is sent from the buying club to the selling club. This approach stands in contrast to the North American system, where players are primarily traded from one club to another or signed as free agents within the same league (Frick, 2007). Additionally, North American leagues have a mechanism for allocating amateur talent to professional clubs, known as an amateur player draft, which does not exist in European soccer leagues. In Europe, amateur players are free to sign with any organization (Frick, 2007).

Another distinguishing characteristic between professional sports leagues on both sides of the Atlantic concerns total team wage bills. In contrast to their counterparts in the U.S. sports system, where players' compensations are regulated by various salary policies (e.g., salary cap, luxury tax), European soccer teams do not face strict limitations when it comes to players' payrolls. Consequently, teams can, in theory, sign some of the best players globally to enhance their on-field performance, as long as they can afford the wage bills.[7] Moreover, in comparison to the North American major leagues, soccer teams from European leagues do not have roster size limits, as players can move between first team and reserve team.[8] Given all these unique aspects concerning league structure, European soccer teams,

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[7] Financial Fair Play (FFP) Regulations was introduced by UEFA in 2010 and came into force at the start of 2011/12 season. With FFP regulations, UEFA aims to restore and revitalize "good management" in European soccer industry by limiting, if not eliminating, the financial power of so-called "sugar daddy". However, the actual results of FFP regulations are disputable (see Franck, 2014; Peeters & Szymanski, 2014 for more detail)

[8] Clubs participating in the UEFA Champions League and Europa League need to include a minimum of eight homegrown players in a squad restricted to 25. Similar regulations are also enforced in numerous national leagues across Europe (https://www.uefa.com/insideuefa/protecting-the-game/protection-young-players/).

especially those elite ones with financial and performance advantages, have been and continue to be destinations for top global talent, compensating them with salaries comparable to those in major North American leagues (Frick, 2007).

1.7 Dissertation Chapters

In compliance with the guidelines established by the Faculty of Graduate & Postdoctoral Studies and the Faculty of Kinesiology, Sport, and Recreation at the University of Alberta, this dissertation adheres to a three-paper format. These three papers are distinct but collectively aim to explore the individual and combined impact of various aspects of within-team diversity on team performance.

Chapter 2 seeks to understand the effect of individual's cultural diversity in terms of nationality on team performance while exploring the moderating effect of shared team tenure using a dataset from European national soccer teams. Chapter 3 centers on the decomposition of pay dispersion by considering individual performance as the legitimacy of dispersed pay. This chapter primarily investigates the impact of (un)explained pay dispersion on team performance while also delving into the boundary condition related to pay level. Chapter 4 extends the analysis beyond conventional demographic team faultlines, which typically involve surface-level diversity attributes such as age, nationality, and race. Instead, this chapter incorporates deep-level heterogeneity arising from pay dispersion. This nuanced measure allows for the exploration of the combined impact of team faultlines resulting from both surface- and deep-level diversity, which has often been overlooked in existing literature. Additionally, Chapter 4 examines how team members' shared tenure and leaders' multicultural experience can influence and moderate the relationship between team faultlines

and team performance. Chapter 5 provides a summary of the findings from the three

preceding chapters and suggests potential directions for future research on related topics.

Chapter 2

Wearing the Same Jersey? The Impact of Players' Cultural Diversity and Shared Team Tenure on National Soccer Team Performance[9]

... when embraced, [diversity] actually delivers practical benefits, since it ensures that a society can draw upon the talents and energy and skill of all its people. And if you doubt that, just ask the French football team that just won the World Cup because not all these folks look like Gauls to me, they are French, they are French. (Bushnell, 2018, n.p.)

2.1 Introduction

Cultural diversity is a multifaceted concept. Often for cultural diversity, nationality is used as a common proxy due to it being a contributing attribute towards individuals' cultural identities (Godfrey et al., 2020; Richard et al., 2004, 2007). According to Harrison and Klein's (2007) typology, cultural diversity can be considered a variety diversity, which refers to a "composition of differences in kind, source, or category of relevant knowledge or experience among unit members" (Harrison & Klein, 2007 p. 1203). According to this conceptualization, national diversity is a type of variety diversity because members' nationality is a categorical variable and is associated with country/cultural-specific knowledge (Ely & Thomas, 2001; Kearney & Gebert, 2009; Lazear, 1999). This categorization is important when examining the relationship between cultural diversity and team performance with nationality as a proxy for cultural diversity.

Cultural diversity is a mixed blessing for work groups, as research investigating the

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[9] A version of this chapter has been accepted for publication in *Journal of Economics, Race, and Policy* (https://doi.org/10.1007/s41996-023-00120-4)

relationship between cultural diversity and team performance generally yields mixed results (Stahl et al., 2010; Stahl & Maznevski, 2021). To be specific, in a culturally heterogenous team, individuals' cultural differences are often associated with a greater reservoir of unique information, knowledge, experiences, and skills beneficial to problem solving, decision making, and innovation, which in turn improve team performance. However, the more team members are culturally different, the more they are prone to categorize ingroup ("us") and outgroup ("them") within the team based on this dissimilarity, leading to biases as well as impaired communication and collaboration between subgroups (Williams & O'Reilly, 1998), which ultimately can harm team performance.

One potential way to mitigate the negative impacts of cultural diversity on team performance is through a shared team tenure. Time plays a significant role in relation to the cultural diversity–performance relationship as it can be related to both tacit knowledge and team members' communications and interactions (Berman et al., 2002; Harrison et al., 1998, 2002). As Gonzalez-Mulé et al. (2020) described, shared team tenure can help develop relationships amongst these members along with the knowledge gained from working together. In addition to examining the main effect of shared team tenure (i.e., time) in terms of affecting team performance, Chapter 2 moves a step further to test whether it can moderate the main relationship between cultural diversity and team performance by linking it to tacit knowledge sharing and interpersonal communications within the team. Such an exploration of moderators is an important way of defining boundary conditions for a theory (Busse et al., 2017) and plays a significant role in terms of investigating the relationship between different forms of team diversity and performance (Guillaume et al., 2017; van Knippenberg &

Schippers, 2007).

The purpose of this chapter is to investigate how team heterogeneity with respect to members' nationalities as a proxy of cultural diversity influences final team outcomes. Furthermore, the present chapter looks to explore if time as a proxy for tacit knowledge and enhanced team interactions can moderate the cultural diversity and team performance relationship. This chapter focuses on a dataset comprised of national soccer teams from the Union of European Football Associations (UEFA) from 2004 and 2019 using Elo Ranking as a measure of team performance. In terms of national soccer, individual teams now are recruiting an increasing number of players from different regions, making nationality a potentially more salient attribute than other demographic traits such as age (Poli et al., 2018; Richard & Miller, 2013). These players are either naturalized players or with multicultural origins, and may have only "'vague' connections to the countries whose jerseys they wear" (van Campenhout et al., 2019, p. 2). In addition, players from different cultures/countries possess soccer knowledge specific to their national origins (e.g., Brandes et al., 2009) that may have an effect on the diversity and team performance relationship.

In this chapter, a two-stage regression is estimated using an instrumental variable to address the simultaneous causality between cultural diversity and team performance. From the estimation results, evidence is uncovered indicating a greater level of players' cultural diversity measured in nationality is advantageous to on-field team performance. This finding is in concert with prior work stating a positive relationship between cultural diversity and team performance in the context requiring significant level of cooperation and interdependence among team members (e.g., van Knippenberg & Schippers, 2007).

Furthermore, it is found that shared team tenure does have a positive moderating effect on the relationship between cultural diversity and team performance. This conclusion speaks to the importance of identifying and testing moderators in terms of explicating the relationship between cultural diversity and team performance, in which equivocal results often emerge.

2.2 Theoretical Backgrounds and Hypotheses Development

2.2.1 Cultural Diversity and Team Performance

Compared to other diversity attributes, team heterogeneity in terms of cultural (national) differences, is an area where both positive and negative effects of diversity on performance have been observed (Raithel et al., 2021; van Knippenberg et al., 2013). Building off information/decision-making theory (Williams & O'Reilly, 1998), which states multinational teams may have greater access to a variety of cultural/country-specific knowledge, skills, and perspectives that are unique or complementary to team tasks associated with cultural heterogeneity, an increase in national diversity within a team is positively related to team performance (Ely & Thomas, 2001; Kearney & Gebert, 2009). To the contrary, the social categorization perspective suggests people working in teams tend to categorize themselves and others into ingroups and outgroups based on differences and similarities between "us and them" (Tajfel & Turner, 1981; Turner, 1987). As a result, individuals tend to favor members of ingroups, trust them more, and be more willing to cooperate with those with whom they share similarities (e.g., same nationality). Likewise, the similarity-attraction paradigm predicts individuals are attracted to working and cooperating with those to whom they find similar in terms of values, beliefs, and attitudes (Byrne, 1971). Thus, within-team cultural diversity may create a basis for intergroup biases, leading to a disruptive effect on team

processes and performance (van Knippenberg et al., 2013).

Although both positive and negative effects of cultural diversity (i.e., heterogeneity in terms of members' nationalities) are found within the extant literature, for contexts requiring high levels of cooperation and interdependence among team members, the relationship between cultural diversity and team performance is generally a positive relationship (Guillaume et al., 2017; van Knippenberg & Schipper, 2007). Through the lens of social categorization perspective, team members originating from different cultures/countries may have an emphasis on the common group identity and be inattentive to subgroup categorizing processes provided the task demands a greater level of cooperation and interdependence among them (Gaertner & Dovidio, 2000). Furthermore, in a work setting requiring high level of interdependence, interactions and communications between different subgroups may be enhanced, resulting in more harmonious relations between them (Pettigrew 1998). According to information/decision making theory, the requirement of collaboration may also facilitate information processing, since it may encourage information exchange and discussion among different subgroups, which are essential to reap the benefits associated with a multicultural team (van Knippenberg et al., 2004).

Within the context of professional sport, hockey and soccer are examples of sports requiring a significant level of cooperation and interdependence among players, and empirical works indeed found evidence of a positive connection between cultural diversity and team performance in these settings. For instance, Kahane et al. (2013) analyzed team performance from the National Hockey League (NHL) to investigate potential benefits of franchises signing European players. Controlling for players' on-ice skills and abilities along

with the abilities of the coaching staff, their result indicated increased diversity (i.e., including more European players on the team rosters) was positively associated with sporting success. They indicated two distinct areas of how increasing diversity improved team performance. The first is these players were often more skilled in some areas (e.g., basic skill development) in comparison to their North American counterparts. Second, adding additional players from the same European countries as players currently on the roster improved both communications and any cultural barriers that may exist.

Considering the "Big 5" European soccer leagues,[10] Wilson and Ying (2003) asserted a higher share of foreign players was linked to improvement in a club's on-field performance, especially when players were of Balkan or Brazilian origin. Similarly, Ingersoll et al. (2017) analyzed seasonal data from the UEFA Champions League,[11] finding a higher level of within-team cultural diversity, proxied by language distance, positively associated with sporting success on the field. More recently, Royuela and Gásquez (2019) investigated the impact of including more foreign players on roster on a team's sporting success by analyzing a cross-section dataset comprised of approximately 1,000 clubs worldwide. Based on their empirical results, the authors claimed a higher share of non-domestic players improved an individual club's world ranking. Directly connected to the present study, Brandes et al. (2009) examined the effect of national diversity in the German Bundesliga by separating teams into their offensive and defensive position groupings. The estimation results indicated, *ceteris paribus*, increasing nationality-heterogeneity among defensive players improved the

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[10] The five leagues are the English Premier League, Spanish La Liga, German Bundesliga, Italian Serie A, and French Ligue 1.
[11] The UEFA Champions League is an annual competition that runs concurrently with each countries' domestic league schedule that is organized by the Union of European Football Associations and contested by top-division European teams.

entire team's performance, while the effect associated with offensive subgroups was insignificant. The bifurcated results implied the importance of exploring moderators in order to explicate the effects related to cultural differences on final team outcomes.

Taken together, concerning the cultural diversity–team performance nexus in the context of soccer, which requires a high level of cooperation and interdependence, a hypothesis is formulated:

Hypothesis 2.1 (H2.1): An increase in players' cultural diversity within a national soccer team is positively related to its on-field performance.

2.2.2 The Role of Shared Team Tenure

Hadjimichael and Tsoukas (2019) recently summarized the literature on tacit knowledge and outlined three perspectives where previous research utilized the concept of tacit knowledge: conversion, interactional, and practice. For the present chapter, the focus is on the conversion perspective. In this perspective, tacit knowledge is defined as "[a] type of knowledge that is subjective, largely inaccessible to consciousness, tied to activity, and awaiting conversion into an explicit form" (Hadjimichael & Tsoukas, 2019, p. 678). Building off this definition of tacit knowledge, they discussed how the acquisition of this knowledge comes through shared team tenure in an organization and group setting. Following the conversion perspective, they also outlined two research streams important to this study, performance and knowledge management. In terms of the first one, the authors concluded individuals' tacit knowledge, which can be acquired through spending more time with their teammates, was linked to improved organizational/group performance. The second stream emphasizes the importance of externalization (i.e., conversion) of tacit knowledge to promote knowledge transfer within

and across organizations. To facilitate (tacit) knowledge transfer, individuals are encouraged to spend time with others on the team.

In the context of professional sport, empirical work found players from different origins may possess nation-inherent skills that may pass to other teammates from other nations through shared time together. For instance, Brandes et al. (2009) demonstrated that in the German Bundesliga, compared to German midfielders, Brazilian counterparts scored more goals, had higher passing accuracy, and received fewer yellow cards. By analyzing individual players' performance from the five prestigious European leagues, Glennon et al. (2021) demonstrated foreign players outperformed their domestic counterparts in several areas critical to team success on the field (e.g., goals scored). Similarly, in the NHL, Kahane et al. (2013) found players from European countries were often highly skilled in some areas such as basic skill development in comparison to their North American teammates. In addition, different countries may have its own style of play on the field. For instance, Italian soccer has a longstanding association with playing *Catenaccio*—an unspoken system emphasizing defense. Likewise, *Tiki-Taka*, a playing style characterized by short passes, player movement, and ball possession, is linked to notable success in Spanish soccer (Morley, 2014).

These examples and prior research above note the potential importance of a shared team tenure as it is generally referred to tacit knowledge. Prior research on team sports found some supporting evidence regarding a positive tacit knowledge–team performance nexus using the time that players had with a focal team as a proxy of such know-how (Berman et al., 2002; Franck et al., 2011; Humphrey et al., 2009). As Berman et al. (2002) argued "[a]s

players interact on the same team over time, they increase team performance and perhaps build a competitive advantage through group-level tacit knowledge." (p. 18). Therefore, individual members can benefit from others' tacit knowledge through working together on the same team, which can be shared within the team and enhance team performance. The prediction is:

Hypothesis 2.2 (H2.2): An increase in players' shared team tenure is positively related to national soccer teams' on-field performance.

In addition to the main effect, shared team tenure may play a role in terms of moderating the cultural diversity–team performance relationship. On the one hand, although players from different countries/cultures possess inherent tacit knowledge that is beneficial to overall team performance, within a diverse team it takes some time for such benefits to emerge (Earley & Mosakowski, 2000; van Knippenberg et al., 2004, 2020). Consequently, it is possible that heterogeneous teams outperform their homogeneous counterparts in the long run. On the other hand, any potential negative effect associated with cultural diversity on team performance may disappear as time passes since individuals may gain more experience of working and collaborating with each other over time (Harrison et al., 1998, 2002). In other words, when players spend more time together on and off the pitch (i.e., increased shared team tenure), it is plausible they notice their initial stereotypes or biases about "outgroup" members due to different nationalities, which may impair final team outcomes, are incorrect (van Knippenberg & Schippers, 2007). Empirically, Georgakakis et al. (2017) demonstrated shared team tenure between a firm's CEO and top management team members positively

moderated the negative relationship between members' diversity features and team performance.

Given all these arguments, shared team tenure is expected to moderate the relationship between cultural diversity and team performance:

Hypothesis 2.3 (H2.3): Shared team tenure moderates the relationship between cultural diversity and team performance such that the positive relationship will be strengthened.

2.3 Data and Methods

2.3.1 Data

To test the three hypotheses above, a dataset comprised of national teams from all UEFA members running from 2004 to 2019 was under consideration.[12] The year 2004 was the first year that FIFA adopted a new rule requiring a player to demonstrate a "clear connection" to any country they wish to represent (The Federation Internationale de Football Association [FIFA], 2021). To mitigate any potential impact that the COVID-19 pandemic could have on team performance and player availability, the dataset was truncated in 2019. The unit of observation is a national team-season. During the sample period, there are 853 national team-year observations in total.

2.3.1.1 Dependent Variable

Consistent with prior work (e.g., Gásquez & Royuela, 2016; Peeters et al., 2021), Elo score (*Elo_pts*) was used as a proxy for a national team's performance, where a higher Elo score stands for better on-field performance (Peeters et al., 2021). The Elo rating system[13] is

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[12] Information on the members can be found on https://www.uefa.com/insideuefa/national-associations/.

[13] Individual country's Elo point can be found on https://www.eloratings.net. A detailed analysis of Elo points

constructed as a weighted average of past game results, where weights are defined by the strength of the opposing team, the margin of victory, and the importance of the game.

2.3.1.2 Independent Variable

Recall from above that cultural diversity can be categorized into *variety* diversity, which represents individual differences in terms of task-relevant knowledge, experiences, and skills (Harrison & Klein, 2007). Following their recommendation as well as prior literature on soccer team diversity (e.g., Haas & Nüesch, 2012), the cultural diversity of the team was calculated using the Blau index of players' second citizenships (*Blau*). The Blau index, the variable of interest to test H1, is computed as $1 - \sum_{i=1}^{n} p^2$, where p is the proportion of unit members in the kth category. The values can range from 0 to (K–1)/K. For example, according to the roster of team France in 2018, 24 out of 34 players have a second citizenship. In terms of these second citizenships, there are 15 different countries (i.e., categories). To calculate the Blau index, the number of players holding the same second citizenship was divided by 24 (i.e., the proportion of unit members in the kth category), then take the square term before summing all the proportions of these 15 countries. For instance, three players have a second citizenship of Mali, then the proportion of Mali is 3/24.

Compared to a sport that requires less interdependence among players (e.g., baseball), soccer involves a high level of coordination among players fielding different positions, thus, tacit knowledge should play a more important role in terms of promoting on-field performance in this context (H2.2; Shamsie & Mannor, 2013). The variable *Time* was used to test H2.2, which was operationalized by the number of times a national team player was

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calculation can be found the Supporting Information Appendix 2 in Gásquez and Royuela (2016).

called up to the team at the end of the observed year. From there, the team averages were calculated for the observed national team. The operationalization of shared team experience or tacit knowledge through the *Time* variable is consistent with earlier work on this phenomenon in a variety of sport contexts (e.g., Berman et al., 2002; Franck et al., 2011; Humphrey et al., 2009). Information regarding national teams' rosters and players' nationalities were obtained from *Transfermarkt*.

2.3.1.3 Control Variables

Following prior literature on national soccer team performance determination (e.g., Berlinschi et al., 2013; Hoffmann et al., 2002; Peeters et al., 2021), a number of country-specific demographic, socioeconomic, and climatologic variables were controlled for. These include the total population (*Pop_total*), percentage of urban population (*Urban_pct*), gross domestic product (*Gdp_per_capita*), and average temperature (the absolute difference from 14°C; *Temp_14^2*). All demographic, socioeconomic, and climatologic variables were retrieved from the World Bank (https://www.worldbank.org).[14] Except for the climatological variable, squared terms for other variables were incorporated to capture any potential nonlinearity (*Pop_total^2*, *Urban_pct^2*, *Gdp_per_capita^2*) consistent with other studies (see Gásquez & Royuela, 2016).

A country's soccer tradition was also taken into consideration by incorporating the number of years being a member of the UEFA (*UEFA_tenure*; Leeds & Leeds, 2009), and an indicator variable implying whether a specific country had ever hosted either the FIFA World Cup (*WC_host*; Hoffman et al., 2002).

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[14] In line with Hoffmann et al. (2002), England was chosen to represent the UK.

2.3.2 Estimation Issues

Equation 2.1 presents the full model:

$$\text{ELO\_PTS}_{it} = \beta_0 + \beta_1 \text{Blau}_{it} + \beta_2 \text{Time}_{it} + \beta_3 \text{Blau}_{it} \times \text{Time}_{it} + \alpha X_{it} + \varepsilon_{it} \qquad (2.1)$$

where i indexes national team and t indexes year. The main variables of interest regarding

H2.1–H2.3 are $Blau_{it}$, $Time_{it}$, and their interaction term (i.e., $Blau_{it} \times Time_{it}$),

respectively. X is a vector of control variables mentioned previously.

The big issue of using Ordinary Least Squares (OLS) to estimate Equation 2.1 is the

potential presence of endogeneity resulting from simultaneous causality, which occurs when

the causality runs in both directions from the independent variable to dependent variable and

vice versa. To be specific, it could be the case with H2.1 that a higher level of cultural

diversity strengthens a national team's on-field performance. However, one cannot exclude

the possibility that a (relatively) soccer-developing country may recruit some naturalized

players from (more) soccer-developed destinations to enhance its competitiveness on the

field. As a result, the Blau index of players' nationalities will be affected, since more players

with dual citizenship will be included within the team.[15] Therefore, in such circumstance

(i.e., simultaneous causality), outcomes from OLS estimation are biased and inconsistent.

One way to deal with the issue of endogeneity is to use instrumental variables (IV)

with two-stage least squares (2SLS) being the most common IV estimator (Bascle, 2008). In

the present research, a first-stage model with the dependent variable being the Blau index

(*Blau*) was estimated. The IV chosen in this chapter is the number of individual countries'

annual international remittances sent. According to the International Monetary Fund,

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[15] Since 2011, for example, the Ukrainian national team fielded three naturalized Brazilian players in several
competitions.

international remittances refer to the transactions made by migrants when sending home part of their earnings in the form of either cash or goods. For the past decades, the volume of cross-broad remittances grew dramatically, which can be attributed, to a large extent, to the increased flows of international migration (The Global Knowledge Partnership on Migration and Development, 2021; United Nations Economic Commission for Europe, 2011).[16]

In addition, prior research demonstrated a positive relationship between the stock of migrant workers and the amount of remittances sent (Elbadawi & Rocha, 1992). As an essential component of labor migration, remittances and migration are closely connected (Carling, 2008). Therefore, it is assumed individual teams' Blau index should be positively related to the amount of remittances flowing out of the country (*Remittance_paid*). However, the amount of international remittances sent from a country should have no impact on its national soccer team performance. Subsequently, this IV (i.e., annual remittances paid) is potentially correlated with cultural diversity (i.e., independent variable) within the team and not related to team performance (i.e., dependent variable) directly. Relevant data on remittances were collected from the World Bank.

2.4 Results

As noted above, there are 853 national team-year observations. The final sample is 696, due to the unavailability of related information on temperature, GDP per capita, and annual remittances sent. Table 2.1 presents the summary statistics and pairwise correlations with the variables used in the present research for the final sample. The mean Elo points in the sample is 1,663, with the Blau index of 0.587, representing the probability of two players chosen at

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[16] According to United Nations' data, migrant works on average send home between US$200 and $300 every one or two months (https://www.un.org/development/desa/en/news/population/remittances-matter.html).

random from the team being of different nationalities. The correlation between cultural

diversity and on-field team performance is significantly positive in the sample.

Approximately sixteen percent of the observations hosted a World Cup. From the table, one

also notices the average of shared team tenure (*Time*) is 28 (games) and significantly

positively related to on-field team success.

In terms of the IV, *Remittance_paid*, Table 2.2 presents the first stage results from

2SLS. In concert with the assumption, *Blau* is positively related to the amount of annual

remittances paid. As a robustness check, lagged terms in one, two, and three years were

included, along with three- and five-year averages for remittances paid as IVs. In order to

examine the relevance and validity of the instrumental variables, the procedure outlined by

Bascle (2008) was followed to address the endogeneity issues. First, the Wu-Hausman test

rejected the null hypothesis that all variables are exogenous, justifying the application of IV

method. Second, the *F*-statistics from first-stage estimations are greater than 10, which is a

"rule-of-thumb" for a strong IV, indicating no presence of a weak IV issue.

Table 2.3 and 2.4 presents the OLS and IV regression results for Equation 2.1

respectively. H2.1 posited an increase in national team players' cultural diversity is positively

related to teams' on-field performance. Although the coefficient of Blau is statistically

insignificant in Table 2.3, support is found for this hypothesis using the Blau index as the

measure of cultural diversity when looking at the coefficients presented in Table 2.4. H2.2

looked to isolate the influence of individual players' shared team tenure (Time) on national

teams' sporting success. Since the concern of endogeneity surrounds cultural diversity

measure (Blau), an OLS model excluding cultural diversity was estimated. The results from

various models in Table 2.3 and 2.4 found a positive and significant impact of Time on team performance on team performance. As such, H2.2 was validated.

Turning to H2.3, it predicted shared team tenure will strengthen the relationship between team performance and cultural diversity. The focus is centered around the variable coefficient for the interaction term (*Blau×Time*) from Table 2.4. The significant and positive variable coefficient for the interaction term from the estimations supported H2.3.

Table 2.1 Summary Statistics and Pairwise Correlations (n=696)

Variables	Mean	SD	1	2	3	4	5	6	7	8	9
1.Elo_pts	1663.328	222.073	1								
2.Blau	0.587	0.287	0.195***	1							
3.Pop_total[a]	15.998	21.81	0.571***	0.169***	1						
4.Gdp_per_capita[b]	0.027	0.024	0.117***	0.288***	-0.007	1					
5.Urban_pct	0.698	0.141	0.201***	0.230***	0.149***	0.556***	1				
6.Temp_14^2	31.903	35.258	-0.159***	-0.069*	-0.290***	0.393***	0.317***	1			
7.UEFA_tenure	42.932	19.566	0.443***	0.296***	0.294***	0.529***	0.515***	0.044	1		
8.WC_host	0.161	0.368	0.528***	0.270***	0.636***	0.326***	0.245***	0.006	0.349***	1	
9. Time	27.701	8.065	0.417***	0.009	0.256***	0.249***	0.302***	-0.081**	0.323***	0.340***	1

*Note: a: in billion; b: in 2015-year US dollar and million. * p<0.1, ** p<0.05, ***p<0.01*

Instrument Variable	Mean	SD	Max	Min
Remittances_paid (in million)	2,995	4,988	4.900	28,000

Table 2.2 First Stage Estimation Results from Instrumental Variables Regression (2SLS)

	Dependent Variable: *Blau*					
Variables	**Observed Year**	**One-Year Lag**	**Two-Year Lag**	**Three-Year Lag**	**Three-Year Average**	**Five-Year Average**
Remittances_paid	0.0000169***	0.0000173***	0.0000173***	0.0000173***	0.0000176***	0.0000175***
	(3.46×10^{-6})	(3.60×10^{-6})	(3.71×10^{-6})	(3.83×10^{-6})	(3.78×10^{-6})	(3.99×10^{-6})
Pop_total	-0.0008083	-0.0006419	-0.000404	0.0000481	-0.0000142	0.0002525
	(0.0020422)	(0.0020479)	(0.0020511)	(0.0020661)	(0.0020658)	(0.0021068)
Pop_total^2	4.54×10^{-7}	-1.62×10^{-6}	-3.55×10^{-6}	-7.85×10^{-6}	-7.39×10^{-6}	-1.04×10^{-5}
	(0.0000258)	(0.0000259)	(0.000026)	(0.0000261)	(0.0000261)	(0.0000265)
GDP_per_capita	-2.614432	-2.588887*	-2.476182	-2.388101	-2.392676	-2.050546
	(1.669996)	(1.678706)	(1.674165)	(1.670499)	(1.692496)	(1.71674)
GDP_per_capita^2	24.95486	25.54656***	26.01361*	27.02318*	25.61203*	24.4356
	(15.20926)	(15.27348)	(15.28142)	(15.30339)	(15.37228)	(15.56219)
Urban_pct	-2.361622***	-2.336531***	-2.21475***	-2.080314***	-2.16941***	-1.970206***
	(0.7037341)	(0.7052604)	(0.705787)	(0.7060129)	(0.712194)	(0.7236889)
Urban_pct^2	1.813269***	1.794006***	1.713174***	1.623282***	1.682547***	1.54772***
	(0.4938154)	(0.4947476)	(0.495452)	(0.4958795)	(0.4990174)	(0.5063678)
Temp_14^2	-0.0006784*	-0.0006866*	-0.0007155*	-0.0007259**	-0.0006919*	-0.0007309**
	(0.0003655)	(0.0003673)	(0.0003667)	(0.0003668)	(0.0003679)	(0.0003703)
UEFA_tenure	0.002179***	0.0021844***	0.0021082***	0.0019542**	0.0019648**	0.0017883**
	(0.0007385)	(0.0007443)	(0.0007493)	(0.0007553)	(0.0007575)	(0.0007754)
WC_host	0.0878714**	0.088169**	0.0869826**	0.0859493**	0.0809181*	0.0817811*
	(0.0425617)	(0.0427855)	(0.042905)	(0.0430543)	(0.0431801)	(0.0437776)
Wu-Hausman test	4.27**	3.44*	3.78*	4.86**	3.67*	4.13**
F test of excluded instruments	23.86***	23.05***	21.73***	20.32***	21.62***	19.26***
R^2	0.205	0.204	0.202	0.199	0.200	0.198
Standard errors in parentheses. * $p<0.1$ ** $p<0.05$ *** $p<0.01$						

Table 2.3 Estimation Results for Hypotheses Testing (OLS Estimations)

	Dependent Variable: Elo points		
Variables	**M1**	**M2**	**M3**
Blau (H1)	15.882	34.302	37.786
	(30.981)	(27.265)	(28.384)
Time (H2)	----	5.201***	5.312***
	----	(0.974)	(0.959)
Blau×Time (H3)	----	----	2.892*
	----	----	(1.708)
Pop_total	39.106	28.492	30.483
	(24.571)	(19.908)	(19.789)
Pop_total^2	-0.303*	-0.226*	-0.240*
	(0.164)	(0.134)	(0.133)
GDP_per_capita	2100.609	3503.456	3373.036
	(2577.571)	(2634.438)	(2584.744)
GDP_per_capita^2	-3.8×10^3	-7.5×10^3	-7.5×10^3
	(9462.163)	(9351.190)	(9192.556)
Urban_pct	2370.057	1834.119	1966.639*
	(1574.212)	(1223.351)	(1161.855)
Urban_pct^2	-1.7×10^3	-910.129	$-1.0e+03$
	(1274.496)	(976.628)	(929.072)
Temp_14^2	-0.509	-0.320	-0.273
	(0.467)	(0.392)	(0.385)
UEFA_tenure	-1.913	-4.710***	-4.762***
	(1.784)	(1.578)	(1.607)
WC_host	22.410	34.786	31.240
	(29.309)	(25.109)	(25.036)
N	766	766	766
R^2	0.048	0.199	0.205
Standard errors in parentheses. * $p<0.1$ ** $p<0.05$ *** $p<0.01$			

Table 2.4 Estimation Results for Hypotheses Testing (IV Estimations)

	Dependent Variable: Elo Points											
Variables	IV: Observed Year		IV: One-Year Lag		IV: Two-Year Lag		IV: Three-Year Lag		IV: Three-Year Average		IV: Five-Year Average	
	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15
Blau (H1)	285.002**	62.534	263.112**	17.669	282.610**	23.719	324.358**	46.246	278.724**	9.175	305.735**	20.015
	(129.620)	(117.226)	(129.081)	(115.832)	(136.400)	(117.668)	(146.459)	(122.041)	(135.765)	(118.847)	(145.352)	(124.487)
Time	----	7.624***	----	7.458***	----	7.518***	----	7.769***	----	7.415***	----	7.505***
	----	(1.059)	----	(1.071)	----	(1.100)	----	(1.137)	----	(1.118)	----	(1.165)
Blau×Time (H3)	----	18.227***	----	17.708***	----	17.708***	----	17.710***	----	18.151***	----	17.814***
	----	(3.960)	----	(3.959)	----	(3.840)	----	(3.890)	----	(3.945)	----	(3.935)
Pop_total	12.287***	13.648***	12.134***	13.415***	12.084***	13.388***	11.926***	13.433***	11.965***	13.429***	11.725***	13.343***
	(1.368)	(1.141)	(1.345)	(1.115)	(1.366)	(1.120)	(1.410)	(1.136)	(1.366)	(1.125)	(1.426)	(1.160)
Pop_total^2	-0.134***	-0.155***	-0.133***	-0.153***	-0.133***	-0.153***	-0.132***	-0.155***	-0.132***	-0.154***	-0.131***	-0.154***
	(0.016)	(0.014)	(0.016)	(0.014)	(0.016)	(0.014)	(0.017)	(0.014)	(0.016)	(0.014)	(0.017)	(0.014)
GDP_per_capita	1.0×10^4***	8458.767***	1.0×10^4***	8732.395***	1.0×10^4***	8542.235***	9994.061***	8367.749***	1.0×10^4***	8767.457***	1.0×10^4***	8825.437***
	(995.174)	(950.793)	(970.511)	(927.195)	(982.832)	(931.200)	(1008.584)	(923.088)	(989.870)	(945.554)	(1015.860)	(963.076)
GDP_per_capita^2	-1.1×10^5***	-9.4×10^4***	-1.1×10^5***	-9.5×10^4***	-1.1×10^5***	-9.4×10^4***	-1.1×10^5***	-9.4×10^4***	-1.1×10^5***	-9.5×10^4***	-1.1×10^5***	-9.6×10^4***
	(1.0×10^4)	(8519.401)	(1.0×10^4)	(8456.926)	(1.0×10^4)	(8467.154)	(1.1×10^4)	(8460.473)	(1.0×10^4)	(8531.873)	(1.1×10^4)	(8538.603)
Urban_pct	2489.698***	1848.585***	2482.756***	1807.231***	2592.068***	1908.122***	2712.796***	1979.716***	2485.574***	1805.968***	2530.145***	1861.301***
	(518.840)	(489.505)	(521.089)	(502.042)	(525.389)	(499.340)	(529.905)	(488.622)	(524.052)	(507.350)	(527.866)	(506.053)
Urban_pct^2	-1.9×10^3***	-1.4×10^3***	-1.9×10^3***	$-1.4e\times10^3$***	-1.9×10^3***	-1.4×10^3***	-2.0×10^3***	-1.5×10^3***	-1.9×10^3***	-1.4×10^3***	-1.9×10^3***	-1.4×10^3***
	(380.612)	(349.476)	(381.945)	(356.288)	(387.266)	(355.095)	(393.894)	(349.032)	(385.385)	(358.574)	(389.823)	(357.341)
Temp_14^2	-0.565**	-0.381	-0.639**	-0.507**	-0.625**	-0.505*	-0.583**	-0.464*	-0.633**	-0.524**	-0.617**	-0.521*
	(0.274)	(0.269)	(0.263)	(0.257)	(0.273)	(0.261)	(0.288)	(0.268)	(0.270)	(0.261)	(0.286)	(0.271)
UEFA_tenure	1.362***	1.223***	1.264***	1.137***	1.269***	1.154***	1.276**	1.145***	1.279***	1.118***	1.317***	1.135***
	(0.488)	(0.404)	(0.476)	(0.388)	(0.488)	(0.390)	(0.506)	(0.393)	(0.482)	(0.392)	(0.499)	(0.401)
WC_host	39.592	39.306	43.667	47.098*	44.195	48.809*	41.326	46.155*	45.773	50.573*	46.051	51.457*
	(30.105)	(27.344)	(29.370)	(26.562)	(30.166)	(26.569)	(31.976)	(27.234)	(29.621)	(26.296)	(31.146)	(26.840)
Kleibergen-Paap Wald F statistic	25.30	10.69	24.28	12.50	23.15	13.73	22.09	14.18	22.72	13.18	20.27	12.22
Anderson-Rubin Wald test	7.70***	11.50***	6.35**	10.22 ***	6.71***	10.98 ***	8.23***	11.13***	6.66**	10.58***	7.49***	9.95***
N	696	696	694	694	693	693	691	691	689	689	682	682
R^2	0.529	0.644	0.544	0.647	0.533	0.647	0.507	0.650	0.535	0.644	0.518	0.648

Standard errors in parentheses. * $p<0.1$ ** $p<0.05$ *** $p<0.01$

2.5 Discussion

Chapter 2 analyzed a dataset comprised of national soccer teams from the UEFA members to investigate how players' cultural diversity in terms of nationality affected on-field team success. Differing from prior relevant literature, this chapter explored the moderating effect of shared team tenure in relation to the cultural diversity–team performance nexus by connecting it to tacit knowledge sharing and interpersonal interactions.

Conceptualizing cultural diversity within a team as variety diversity, it is measured using the Blau index. This type of diversity represents individual differences in task-related knowledge, skills, and perspectives (Harrison & Klein, 2007). Based on the results from various IV regression models, in terms of H2.1, a positive effect of players' cultural heterogeneity on overall team performance measured by Elo points was found. The positive effect can be explained from following two standpoints. First, soccer is a sport requiring a great level of interdependence and cooperation among players regardless of their cultural backgrounds on the field. These characteristics may make players with different cultural backgrounds to set aside the "us vs. them" ideology (i.e., social categorization) and focus on winning the match as the collective goal for the teams (van Knippenberg & Schipper, 2007). Second, the need to collaborate between team members may also facilitate information processing within the team, which is advantageous to team performance (van Knippenberg et al., 2004). To be specific, based on results from Table 2.4, other things being equal, a one standard deviation increase in players' cultural diversity would improve team performance by 76 (M6)–93 (M11) Elo points. When looking at the 2019 rankings, this discrepancy could

determine the ranks between the 1st (Belgium with 2084 points) and 6th (Portugal with 1986 points) ranked teams.

Pertaining to the testing of H2.2 in Table 2.3 (M2), the conclusion regarding a statistically significant and positive impact of team members' shared team tenure on team performance are consistent with some earlier work in sport (Berman et al., 2002; Humphrey et al., 2009). Besides, as increasing number of national soccer teams have recruited players with different cultural backgrounds, it is assumed these individuals have country-specific soccer tacit knowledge. Thus, the estimation outcome highlights the fact that regardless of the origins of tacit knowledge, it can be synergized to enhance team performance. In addition to confirming its main effect on team performance, this chapter moved a step further by examining how shared team tenure may moderate the perceived cultural diversity–team performance relationship (H2.3). While explicating the positive moderating effect of shared team tenure, on the one hand, if players spend more time together on and off the field, they can learn from their culturally different teammates (either multicultural or naturalized) in terms of their ways of interpreting problems and using their skills to solve them, even if they are equally talented (Ingersoll et al., 2017); on the other hand, stereotypes or biases that resulted from subgroups created by social categorization processes based on salient diversity features such as nationality may be reduced as time passes (Katz, 1982; van Knippenberg & Schippers, 2007).

Based on the estimation results from M4 of Table 2.4, Table 2.5 presents the marginal effects associated with cultural diversity (*Blau*) on Elo points with shared team tenure (*Time*) increasing from the minimum to maximum at the interval of 1. In terms of on-field team

performance, the marginal effects of players' cultural diversity changed from significantly

negative to significantly positive as shared team tenure increases. In addition, the marginal

effects at the interval of 0.5 were plotted in Figure 2.1. These results are consistent with prior

expectation that the positive effect associated with heterogeneity of individual's cultural

differences is reinforced when team members' shared team tenure increases.

Table 2.5 Marginal Effects of Cultural Diversity (Centered) for M4

Shared Team Tenure (Time)	Cultural Diversity (Blau)
1	-374.996**
	(177.740)
2	-283.860*
	(162.431)
3	-192.724
	(148.189)
4	-101.588
	(135.351)
5	-10.453
	(124.354)
6	80.683
	(115.723)
7	171.819
	(110.017)
8	262.955**
	(107.701)
9	354.091***
	(108.993)
10	445.227***
	(113.768)
11	536.363***
	(121.618)
12	627.498***
	(131.994)

Shared team tenure increases from the minimum to maximum at the interval of 1.
Standard errors in parentheses. * $p<0.1$ ** $p<0.05$ *** $p<0.01$.

Figure 2.1 The Moderating Effect of Shared Team Tenure (Centered) for M4

Average Marginal Effects of Cultural Diversity with 95% CIs
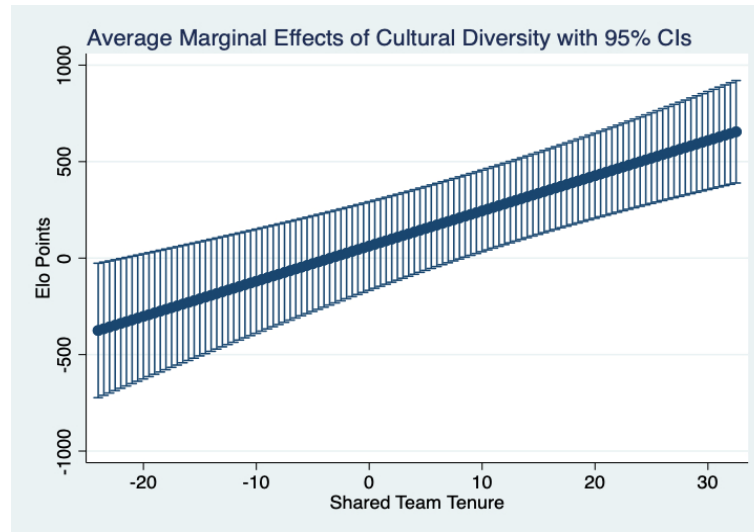
2.5.1 Theoretical and Practical Implications

The theoretical contributions of this research are two-fold. First, using a dataset of national

soccer teams, the results emphasized the importance of controlling the nature of a work

setting (independent vs. interdependent) as a contextual factor while analyzing the potential

impact associated with cultural diversity. To be specific, the ultimate effect of cultural

diversity on team performance may vary depending on the level of interdependence required

by the nature of the task (Guillaume et al., 2017; van Knippenberg & Schippers, 2007).

Second, the identification and testing of shared team tenure as a moderator speaks to the

significance of exploring various boundary conditions related to the cultural diversity–team

performance relationship (Glennon et al., 2021). More importantly, instead of proxying

shared team tenure as team collaboration (e.g., Harrison et al., 1998, 2002) solely, it was

viewed conceptually as a variable representing tacit knowledge in the present study. This

construct follows the information/decision-making perspective, as team members from

different countries/cultures may possess specific skills or knowledge that may be beneficial

to the national team on-field performance. Thus, the testing of this moderating effect is

driven by theory, which is a recommendation by Cunningham and Ahn (2019) to researchers when conducting such analyses.

In the context of sport, this chapter may provide some practical implications. As teams continue in their global search for talent (e.g., Schmidt, 2021), recruiting players from multiple cultural origins improves teams' sporting success. More broadly, organizations in general industries should scout suitable employees globally so as to obtain the potential benefits associated with a multicultural team.

Given the nature of the research setting (i.e., soccer), the findings may speak to the significance of valuing and leveraging employees' cultural differences in the context of interdependent working environments, which applies to most organizations, if not all, as certain degree of interdependence is an imperative to achieve task goals. First, organizations should create and continuously develop an environment that celebrates diversity and inclusion with the aim of enabling all employees at all levels to participate and make meaningful contributions, regardless of any distinguishing factors (e.g., gender, race, ethnicity). Moreover, as the length that team members spend together (i.e., shared team tenure) may positively moderate the relationship between cultural diversity and team performance, implying a more stable team may reap the benefits of a broader range of task-related skills, perspectives, and experiences that generated from a cultural heterogeneous working force. Thus, upper-level managers need to look at the design and implementation policies that can reduce turnover rates, for example, a pay-for-performance strategy while structuring remuneration system (Shaw, 2014). However, how to balance managers' (high) expectations on team performance and the time a team may need to benefit from its culturally

heterogenous members is another important issue while designing relevant human resource management policies. For example, while assessing the performance of a culturally diverse team, specific criteria should be in effect to take into consideration how long the individuals have worked together on the same team.

2.5.2 Limitations

As with all other studies, Chapter 2 has several limitations highlighting future directions for research. First, although individuals' nationalities can serve as a proxy for deep-level indicators of cultural differences (Stahl et al., 2010), solely relying on the Blau index may be oversimplified. For example, while calculating the Blau index of players' second nationality for the French national team, Spain (Lucas Hernández) and Philippines (Alphonse Areola) carry the same weight. Nevertheless, these two countries are very different in terms of a variety features such as language and culture (in a broad way). Therefore, a more nuanced way of modeling cultural diversity should take these factors into consideration. An alternative would be a (mean) Euclidean distance derived from Hofstede's cultural dimensions (Maderer et al., 2014). However, the premise of operationalizing cultural diversity in this way would be conceptualizing it as a *separation* diversity, otherwise incorrect results may emerge (Harrison & Klein, 2007).

Second, in this chapter, coach-related factors were not incorporated into the analyses. However, both literature on general industries (e.g., Raithel et al., 2021) and soccer (e.g., Peeters et al., 2021; Szymanski et al., 2019, 2021) demonstrated leaders' or coaches' multicultural backgrounds and working experience have significant effects on team performance. In addition, while focusing on the final on-field performance of national teams,

the process through which coaches may work on the practice field, in the locker rooms, and during the games to achieve the benefits associated with culturally different players was overlooked. Thus, it would be interesting for future studies to see how these attributes interact with team cultural diversity as well as members' shared team tenure in terms of affecting overall team performance.

The last limitation relates to the generalizability of the research context. Soccer players might share more in common due to their universal possession of certain soccer skills and may not face some of the same limitations "assimilating" as in other settings. For example, players can still understand drills and plays without knowing the local language whereas not knowing the language could be a much more substantive problem in other contexts. To some extent, the generalizability of results generated from the sporting context may be constrained due to its simplicity. However, this vein of research still provides a type of conservative test or "wind tunnel" test (Kahn, 2000; Wolfe et al., 2005). In other words, if an expected relationship cannot be observed in sport setting, then it is highly unlikely that it could be detected under more complicated circumstances. Therefore, to further extend the conclusions of this chapter, future studies may probe the role of tacit knowledge with respect to moderating the cultural diversity–team performance relationship in general industries.

2.6 Conclusion

By examining a dataset from the UEFA national teams, Chapter 2 presents evidence that in the context of a work setting requiring high level of cooperation and interdependence among team members, individual differences in cultural backgrounds are conducive to improved final team outcomes. Moreover, it is found team members' shared tenure can enhance team

performance as it may be a representative of a team's stock of tacit knowledge as well as

better communication and interaction among culturally heterogeneous members within the

team.

Chapter 3

How (Un)Explained Pay Dispersion Influences Team Performance: The Case of the English Premier League

3.1 Introduction

As a critical component of compensation systems, the dispersion of pay amongst employees received considerable attention in the management literature (Connelly et al., 2016). Findings regarding the relationship between pay dispersion and workforce performance (e.g., organizational, team and individual performance) are mixed; studies revealed positive, negative, and null relationships in various settings including business (Shaw, 2015), education (Trevor & Wazeter, 2006), healthcare (Brown et al., 2003), trucking (Kepes et al., 2009), and sports (Bloom, 1999). Among these domains, the unique availability of salary and performance data in professional sports (Kahn, 2000) makes it a fertile research setting exploring the impact of pay dispersion on team performance (Shaw, 2014; Shaw & Zhou, 2021). Predictably, studies conducted in these sporting contexts generated empirical evidence that exactly mirror those contexts within the general literature. One potential explanation for the inconsistencies in the relationship between pay dispersion and team performance is rooted in how pay dispersion is conceptualized and operationalized (Shaw, 2014).

Empirical evidence from prior studies investigating sporting contexts supported the assertion of a negative relationship between pay dispersion and team performance (e.g., Bucciol et al., 2014; Bykova & Coates, 2020; Coates et al., 2016), particularly those settings that require a great level of interdependence among teammates (e.g., soccer). Anecdotal examples appear to lend support to this notion. Leicester City's extraordinary championship

in the English Premier League during the 2015–2016 season serves as a recent illustration. The team operated with a considerably lower wage bill and the degree of salary dispersion was less pronounced in comparison to other giant clubs. Within the database of this chapter, the coefficient of variation for Leicester City's players' salaries stood at 0.37, whereas elite clubs such as Chelsea, Liverpool, and Manchester United recorded substantially higher figures, surpassing 0.72.[17]

A notable common feature of the extant research on the pay dispersion–team performance relationship is to look at *unconditional* pay dispersion, which is "computed without taking into consideration the differences across workers within a firm" (Kahane, 2012, p. 166). Although illuminating, according to Shaw (2014), studies focusing on *unconditional* pay dispersion tend to cancel out the effects of pay dispersion that hinge on individual (player) inputs (performance), "leaving only the residual or unexplained pay dispersion component to relate negatively to on-field performance" (p. 528). In contrast, Trevor et al. (2012) analyzed a dataset of a highly interdependent sport—professional hockey—and demonstrated dispersed salaries can be associated with improved on-ice team performance, if (and only if) the players consider the pay dispersion legitimate, or, in other words, it can be explained by their performance (Conroy et al., 2014).

Trevor et al.'s (2012) nuanced conceptualization and operationalization—dividing pay dispersion into its explained and unexplained components—combines theoretical advances and analytic rigor (Shaw, 2014). In addition, their method "is excellent for dealing with panel or archival data" (Downes & Choi, 2014, p. 63) when examining issues related to

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[17] The coefficient of variation is a widely used indicator for assessing pay dispersion, with higher values indicating a greater degree of salary disparity within the team.

pay dispersion at the firm level, and an "excellent [example] of how researchers are melding conceptual advances with refined analytic approaches" (Shaw, 2014, p. 534). Therefore, following the approach proposed by Trevor et al. (2012), this chapter examines another interdependence-intensive setting—the English Premier League (EPL), one of the "Big 5" European soccer leagues—and determines how explained and unexplained salary dispersion influence on-field team performance.

The topic of team composition is a significant area of research utilizing sporting data (Simmons, 2018). Examining the roles of individual team members, rather than solely focusing on the team as a whole, is crucial when assessing overall team performance, since not all employees are equally important to achieving team goals and objectives (Delery & Shaw, 2001; Humphrey et al., 2009). For example, a soccer team roster consists of approximately 25 to 30 players, but only 11 to 14 of those players actually play a single match[18], with a moderate turnover from one match to another during the entire season. Therefore, to conduct this study, in addition to examining the entire rosters, the analyses had an emphasis on, in Humphrey et al.'s (2009) term, "strategic core roles". These roles refer to the 11 players with the highest number of starts in a given season, as they played a significant role in deciding individual match outcomes and season-long on-field performance records. In this way, team composition was taken into consideration, which has a significant influence on pay dispersion in the context of professional team sports (Simmons, 2018).

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[18] Starting from the 2022/23 English Premier League season, teams can name a total of nine substitutes for a single game instead of seven. In addition, during each game, teams are permitted to make five substitutes on three occasions, with an additional opportunity at halftime.

This chapter adds valuable insights into the academic discourse on compensation systems and team performance within interdependent working environments. First, based on the estimation results, explained pay dispersion has a positive impact on overall team performance, while unexplained pay dispersion does not show a significant effect. Furthermore, the interacting effect of pay level and pay dispersion on team performance was examined, which is an important but often overlooked aspect in the existing literature (Shaw & Zhou, 2021). In specific, depending on the team composition, the moderating effect of pay dispersion on the relationship between pay level and team performance is either positive or insignificant.

3.2 Literature Review

Over the past few decades, the field of professional sports has become a valuable setting for researchers to empirically examine the relationship between pay dispersion and team performance (Shaw, 2014). Consistent with the broader literature, studies of the pay dispersion–team performance relationship using sport data produced inconsistent findings.[19]

Among the four major North American sports leagues, Major League Baseball (MLB) received the most attention from scholars with results predominantly showing a negative relationship between within-team salary inequality and on-field team performance. An early example, Bloom (1999), examined the effect of pay dispersion on player and team performance. The regression estimation results revealed greater wage disparity has harmful effects on both individual baseball player performance and team winning percentage, regardless of the measures of pay dispersion (e.g., Gini index and coefficient of variation).

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[19] Since the empirical setting is professional soccer, the literature review is confined to studies analyzing professional team sports data. For a more comprehensive review, please refer to Shaw (2014).

Depken (2000) later discovered higher wage disparity impedes baseball team performance which was corroborated by Frick et al. (2003) and Jewell and Molina (2004). Similarly, Tao et al. (2016) showed teams paying disproportionally higher salaries to several top players (i.e., with salary dispersion varying significantly between players) are prone to perform more poorly. However, they admitted inter-team payroll disparities (i.e., individual teams' relative payroll positions in the league) contribute more to match outcomes than intra-team salary dispersion.

As it pertains to other "Big 4" leagues in North America, research revealed the relationship between salary dispersion and team success to be either positive or null. Investigating National Basketball Association (NBA) player salaries, Frick et al. (2003) found a significantly positive relationship between pay dispersion and on-court team performance. In contrast, Berri and Jewell (2004) along with Katayama and Nuch (2011) claimed wage disparities have no significant effect on team performance in the NBA. In the National Football League (NFL) and the National Hockey League (NHL), Frick et al. (2003) demonstrated salary dispersion has no significant effect on team performance.

Nevertheless, research found negative associations between increasing salary inequality and the success of NFL (Mondello & Maxcy, 2009) and NHL franchises (Depken & Lureman, 2018). Considering the diverse patterns observed in the pay dispersion–team performance relationship across different professional sport leagues, Frick et al. (2003) argued the variations in the effects can be attributed to differing levels of player interdependencies and/or cooperation requirements within each league. Specifically, they proposed in team sports necessitating a large roster size, where players tend to have more

interactions, a compressed pay structure should be conducive to enhancing team performance.

Turning to professional soccer, Coates and various colleagues explored the salary dispersion–team performance relationship by analyzing data from Major League Soccer (MLS; Bykova & Coates, 2020; Coates et al., 2016). Based on their examination of a longitudinal dataset from 2005 to 2013, Coates et al. (2016) argued within-team salary inequality is negatively associated with on-field team performance. In addition, Bykova and Coates (2020) incorporated additional variables capturing player and coach characteristics into their regression models. Consistent with previous outcomes (Coates et al., 2016), team success declines as compensation structures become more unequal.

Studies exploring the impact of salary dispersion on team performance have been sparse in European soccer settings since individual players' salary information is not commonly available to the public. Exceptions in this regard include studies of top tier German and Italian professional soccer teams. Franck and Nüesch (2011), for instance, investigated the effect of player salary distribution on team seasonal winning percentage and league standing for the German Bundesliga. In contrast to other previous studies, which have tended to focus on the linear relationship between pay inequality and team performance, the authors included quadratic terms—the Gini index and coefficient of variation—in the models to capture the nonlinear impacts of pay dispersion. Their fixed-effect regression estimations revealed a U-shaped relationship between salary disparity and sporting performance. In addition, they found pay structures influence the ways teams compete on the field; teams with

greater wage disparities display more individualism (measured in numbers of dribbles and runs) than those with less pay inequality.

Meanwhile, Bucciol et al. (2014) employed a novel method to examine the role salary dispersion plays in determining match outcomes in the Italian Serie A, conceptualizing what constitutes a team in a variety of ways. Specifically, when only active team members (i.e., all team members who actually played at least one minute of a given match) were considered, greater pay dispersion led to fewer wins. However, when they included 18 enlisted players for a given match or the entire team roster into the analysis, the influence of pay disparity changed from negative to positive. They provided evidence that increased pay dispersion adversely affects individual players' performance. This finding is in contrast to earlier work by Simmons and Berri (2011) which proposed within-team wage disparities positively impact basketball players' performance in the NBA.

All of the above-mentioned studies, regardless of their empirical settings and results, looked at the effect of *unconditional* pay dispersion. In looking at unconditional pay dispersion, it does not take into consideration of the influences regarding human capital (i.e., player heterogeneity) or the basis of salary differences (i.e., performance-based or non-performance-base) when conceptualizing and operationalizing within-team pay disparity (i.e., horizontal pay dispersion; Kahane, 2012). In contrast, another line of research endeavored to address this issue by investigating *conditional* pay dispersion. For instance, in their analysis of MLB data, Debrock et al. (2004) considered the impacts of both unconditional and conditional salary dispersion. The unconditional measure refers to overall team payroll disparities that are not contingent upon individual players' productivity. Consistent with

results from the general MLB literature, the authors found higher pay dispersion leads to lower winning percentage.

Meanwhile, Debrock et al. (2004) estimated conditional dispersion in two steps. First, they regressed individual players' wages on a variety of personal skills to compute expected wages as well as resultant residuals. Then, they calculated the dispersion of team-level average expected wages and residuals by Herfindahl–Hirschman index. Second, along with other variables, they estimated these measures of dispersion in the team performance models to determine their influences. The regression estimation results indicated conditional salary dispersion is negatively related to team performance, though a higher average expected wage improve win-loss records (Debrock et al., 2004).

Like Debrock et al. (2004), Kahane (2012, 2018) adopted a two-stage approach to examine the conditional dispersion of players' wages and determine whether it enhances or impedes NHL teams' seasonal performance (i.e., regular season winning percentage, playoffs slots). First, he used the residual term from a wage estimation to calculate within-team conditional pay dispersion through standard deviation and interquartile range. Then, he included these measures in different regression models to assess their impacts on team success. Based on the empirical results, Kahane (2012, 2018) argued the relationship between conditional salary dispersion and team performance is significantly negative. In a similar way, Simmons and Berri (2011) modeled a salary equation for NBA teams for the 1990 to 2008 period that included players' previous season performance statistics to obtained justified (i.e., predicted values) and unjustified (i.e., residuals) pay dispersion. They then regressed these two types of dispersion (measured by Gini index) with other controlling variables, such

as teams' relative salaries, in a fixed effects model to assess their effect on teams' winning percentage. The resulting justified dispersion coefficient was positive and significant while the unjustified dispersion coefficient was insignificant. Likewise, when individual players' productivity was the dependent variable, higher justified dispersion led to improved personal performance while unjustified dispersion had null effect.

Another approach to refine the construct of pay dispersion is based on legitimacy, which can be defined as normatively accepted pay dispersion-creating factors (Shaw & Zhou, 2021). For instance, by analyzing an NHL dataset ranging from 1998 to 2004, Trevor et al.'s (2012) conditioned players' salaries on individual players performance in previous season, from which they established the concept of *dispersion in explained pay (DEP)* and *dispersion in unexplained pay (DUP)*. This distinction (i.e., explained and unexplained) is similar to Gupta el al.'s (2012) conceptualization with respect to performance-based and non-performance-based, as the basis of pay dispersion in Trevor et al. (2012) is individual players performance from previous season (Downes & Choi, 2014). The analyses in Trevor et al.'s (2012) work revealed pay dispersion that can be explained by differences in player input (i.e., DEP) boost hockey team performance, whereas unexplained pay dispersion (i.e., DUP) has no significant impact. Meanwhile, the positive effects of DEP have diminishing returns when it comes to enhancing team performance.

In conclusion, one potential reason for the inconsistencies observed in pay dispersion related work refers to the definition of pay dispersion. For instance, *unconditional/conditional* (Debrock et al., 2004; Kahane, 2012), *justified/unjustified* (Simmons & Berri, 2011), and *explained/unexplained* pay dispersion (Trevor et al., 2012)

have been introduced and adopted in empirical studies examining various settings that

generated mixed outcomes regarding the connection between salary disparity and team

performance. This issue highlights the significance of exploring boundary conditions related

to the "who" question in terms of refining the construct of pay dispersion (Busse et al., 2017).

To be specific, scholars postulated "dispersion *per se* is neither functional nor dysfunctional"

(Shaw et al., 2002, p. 504), instead, it is the basis or legitimacy of pay dispersion that can

determine the direction of its influence on team performance (Shaw, 2014; Shaw & Zhou,

2021; Trevor et al., 2012).

3.3 Theoretical Foundations and Testable Hypotheses

3.3.1 Theoretical Foundations

By and large, researchers in diverse fields seeking to elucidate the issue of pay dispersion in

different contexts have relied on tournament theory, equity theory, or expectancy theory

(Gupta et al., 2012).

In terms of explicating the relationship between pay dispersion and team

performance, the first theory that researchers have frequently applied is tournament theory

(Lazear & Rosen, 1981). Generally, tournament theory posits higher pay dispersion

contributes to improved performance. According to this theory, employees compete against

each other for the prize of higher rank and pay in organizations because top-ranked

individuals are rewarded at significantly higher rates of pay than their lower-ranked

counterparts, creating wide internal salary dispersions. On the one hand, these wide pay

differences incentivize lower-ranked workers to work hard to move up in the corporate ranks

so they can receive the increased remuneration that comes with a higher rank. On the other

hand, the widely dispersed payrolls motivate high-ranking employees to maintain high levels of effort to avoid being surpassed by others and suffering dramatic declines in pay (Kahane, 2018). In addition to improving individuals' levels of effort via nonlinear prize increases within organizations, this competition for rank may attract high performers from outside the organizations (Downes & Choi, 2014), which may, in turn, increase overall workforce performance.

Nevertheless, under tournament theory, relative differences in individuals' performance rather than absolute excellence determine success, which means lowering rivals' performance may create a path to higher ranks and salaries for some people inside organizations (Shaw, 2014). Lazear (1989), for instance, argued if employees compete for the same prize, some of them may employ sabotaging behaviors to reduce competitors' efforts so that they can win the prizes. This phenomenon may negatively affect final team outcomes, especially in highly interdependent working environments.

The second theory that researchers examining the issue of pay dispersion have often used is equity theory (Adams, 1963). Equity theory postulates individuals make social comparisons by calculating the ratios of their inputs (e.g., effort) to outputs (e.g., pay) and comparing those ratios to referent others. People perceive inequity or unfairness when the ratios are not in balance. Equity theory posits when pay differences become larger, some individuals perceive inequity in pay and change their inputs (e.g., reducing personal effort) or outcomes (e.g., negotiating higher pay) or leave the field (Downes & Choi, 2014). Thus, researchers adopting this perspective have assumed pay dispersion has a negative effect on performance (Conroy et al., 2014). Building off equity theory, Levine (1991) argued

compressed pay structures sustain and stimulate cohesiveness such that, in firms where teamwork is essential, increased cohesiveness enhances total firm productivity.

Although equity theory does predict positive outcomes, researchers generally overlooked these effects (Dowenes & Choi, 2014; Conroy et al., 2014). Actually, the direction of resultant effects depends on how people perceive the legitimacy of pay dispersion (Gupta et al., 2012). Specifically, individuals should perceive dispersion resulting from performance-based pay as equitable and it should have a positive relationship with motivation and sorting effects, thereby enhancing workforce performance. Meanwhile, individuals may interpret non-performance-based pay dispersion as inequitable, which will lower motivational levels and make attracting high-performing employees difficult (Downes & Choi, 2014). As a result, team performance may be impeded.

The third theory researchers commonly applied to the pay dispersion–performance relationship is expectancy theory (Vroom, 1964). Expectancy theory postulates three factors shape employee motivations: valence, Effort→Performance (E→P) expectancy, and Performance→Outcome (P→O) expectancy (Conroy et al., 2014; Gupta et al., 2012; Vroom, 1964). In the context of the present study, this theory implies within-team pay dispersion will motivate players (employees) to perform if (a) they value a higher salary (i.e., valence), (b) recognize the possibility that higher effort will lead to higher performance (i.e., E→P expectancy), and (c) believe that higher performance will lead to a higher salary (i.e., P→O expectancy).

Moreover, Gupta et al. (2012) proposed rather than pay dispersion *per se*, it is performance-based pay dispersion that elicits higher performance, and emphasized the

importance of perceptions regarding expectancy theory, suggesting that individuals are more likely to perceive the P→O expectancy when pay differences are sufficiently large (Mitra et al., 1997; Mitra et al., 2015), implying greater pay dispersion. Viewed in this way, the greater the performance-based pay dispersion (i.e., dispersion that can be explained by individual players performance in this chapter), the stronger the P→O expectancy and, *ceteris paribus*, the higher individual performance motivations (Gupta et al., 2012), which can be aggregated to team-level performance (Downes & Choi, 2014).

Tournament, equity, and expectancy theories offer rich insights into understanding the multifaceted relationship between pay dispersion and team performance. Tournament theory suggests competition fostered by pay dispersion can lead to improved performance, but it may also give rise to undesirable behaviors in certain contexts. Equity theory highlights the importance of perceived fairness, as pay dispersion driven by performance is positively associated with motivation and performance, while non-performance-based dispersion can hinder both. Similarly, expectancy theory underscores the role of performance-based pay dispersion in improving team performance.

In a review of relevant literature, Downes and Choi (2014) proposed a framework for understanding pay dispersion by synthesizing the aforementioned three theories (i.e., tournament theory, equity theory, and expectancy theory). Specifically, these authors categorized pay dispersion into four groups using quadrants representing vertical (i.e., pay dispersion across job categories) or horizontal dispersion (i.e., pay dispersion within the same job categories) and performance-based (i.e., pay dispersion that is not based on individual differences in performance) or non-performance-based (i.e., pay dispersion that is based on

individual differences in performance) structures. When focusing on vertical performance-based pay dispersion, the authors argued tournament and equity theories were suitable for explaining the impact of pay dispersion on team performance. In contrast, concerning the influence associated with horizontal performance-based dispersion (e.g., the focus of the present study), Downe and Choi (2014) contended equity and expectancy theories were applicable, with the former serving as the primary explanatory framework, as elaborated on in Trevor et al. (2012).

In summary, in order to harness the benefits of pay dispersion, it must be based on legitimate sources, such as employee performance, and this legitimacy must be identified (Shaw & Zhou, 2021). However, unexplainable pay dispersion may lead to undesirable consequences such as perceptions of inequity and reduced motivation, ultimately affecting team performance negatively. This nuanced understanding is crucial for organizations seeking to optimize pay structures to enhance team performance.

3.3.2 Hypotheses Development

As noted earlier, Trevor et al. (2012) disaggregated pay dispersion into two parts: dispersion in explained pay (DEP) and dispersion in unexplained pay (DUP). According to these authors, individuals should view DEP as equitable because it depends on a legitimate or normatively accepted factor that creates differences in their remunerations, which is their individual performance. Consequently, per equity theory, DEP should not yield actions that undermine collective team goals in interdependent work settings (e.g., professional hockey). In addition, due to its sorting effects, teams employing high DEP policies should enjoy more

effective team performance than their counterparts with low DEP policies because the former

ones attract and retain more high-performing players (Shaw, 2015; Trevor et al., 2012).

Furthermore, researchers have used expectancy theory to explain the positive

relationship between DEP and team performance (Downes & Choi, 2014; Gupta et al., 2012;

Kepes et al., 2009). From the perspective of expectancy theory, players motivational levels

hinge on the extent to which their performance is tied to pay (Conroy & Gupta, 2016;

Downes & Choi, 2014). If pay differences are performance-based, people will expect

improved performance to lead to higher salaries (i.e., P→O expectancy). This expectation

will, *ceteris paribus*, elicit improved individual performance, which can be aggregated to

team-level performance (Downes & Choi, 2014).

While individual performance is widely acknowledged as a legitimate condition for

creating pay dispersion, the scope of legitimacy or normatively accepted reasons for

dispersed remuneration extends beyond performance and can be based on other observable

factors (Gupta et al., 2012; Li et al., 2022; Rousen, 2020; Shaw & Zhou, 2021). For instance,

when legitimacy is based on differences in individual teaching experience, Pfeffer and

Langton (1993) found that pay dispersion was positively related to the research performance

of college and university faculty members. Additionally, experience-based pay has been

associated with a sorting effect, as demonstrated by Shaw and Gupta (2007), who found a

negative relationship with the turnover rate of average-performing employees. Meanwhile,

market factors related to the job have been considered as an acceptable source of pay

variation. For example, although assistant professors assume the same job contents—

teaching, research, and service—the pay of an art history assistant professor is usually lower

than that of a counterpart from the department of engineering, attributing to the market

differences of the positions (Gupta et al., 2012). In terms of DUP, no theory predicts DUP

has a positive connection to enhanced organizational and/or team-level performance (Conroy

et al., 2014). Indeed, empirical studies looking at both sport (Trevor et al., 2012) and non-

sport settings (Grabner & Martin, 2021; Kepes et al., 2009; Li et al., 2022) showed either a

negative or no relationship between DUP and workforce outcomes.

Taken together, in the present study following hypotheses were tested:

Hypothesis 3.1 (H3.1): Higher dispersion in explained pay (DEP) is positively associated with team performance.

Hypothesis 3.2a (H3.2a): Higher dispersion in unexplained pay (DUP) is negatively associated with team performance.

Hypothesis 3.2b (H3.2b): Dispersion in unexplained pay (DUP) is not associated with team performance.

Although extensive research on the relationship between pay dispersion and team

performance exists, a significant gap exists in the literature regarding the interactive effect of

pay level and pay dispersion on team performance (Brown et al., 2003; Shaw, 2014). Pay

dispersion and pay level, two essential components of any pay system, should be considered

simultaneously for researchers and practitioners to obtain a holistic view of compensation

system and its subsequent effect on performance. In contrast to the mixed findings on the pay

dispersion–team performance relationship, numerous studies have demonstrated a positive

effect of higher payrolls on team performance, particularly in professional team sports

contexts (e.g., Hall et al., 2002; Simmons & Forrest, 2004; Trevor et al., 2012). Therefore, in

addition to testing H3.1, the last hypothesis relates to the moderation of pay dispersion on the relationship between pay level and team performance.

Firstly, in accordance with efficiency wage theory (Akerlof & Yellen, 1986), pay level is a factor that influences employees' perception of inequity resulting from unequal payment. Nevertheless, increased salary may mitigate individuals' feelings of inequity (Bloom & Michel, 2002). In addition, when linking payment to individual performance, as discussed in the previous section (i.e., equity theory), people should not perceive unequal payment as inequitable since the pay difference is considered legitimate. Furthermore, organizations offering salary premiums tend to attract, retain, and motivate the best employees (Brown et al., 2003). Hence, higher level of explained pay dispersion should amplify the effect of pay level.

Secondly, pay level, as a pay policy adopted by individual organizations, may influence the P→O expectancy (Gupta et al., 2012). In the present case, the higher the players' salaries, the clearer the performance→pay linkage becomes. Consequently, higher remuneration may not only provide added incentives to current players but also attract high-performing players from outside the teams. Specifically, as employees consider dispersed pay legitimate, DEP may positively moderate the effect of pay level on team performance through attracting, retaining, and motivating best employees. Thus, the following hypothesis predicts:

Hypothesis 3.3 (H3.3): Dispersion in explained pay (DEP) positively moderates the relationship between pay level and team performance.

These hypotheses are examined below.

3.4 Data and Methods

3.4.1 Data

In terms of the empirical setting, one of the European "Big 5" soccer leagues–the English Premier League was chosen. The sample period encompassed the 2013/14 to 2018/19 seasons. The data used in the present study came exclusively from secondary sources. Salary data were gathered mainly from *Capology* (www.capology.com), a website specializing in player salary information, supplementing it with remuneration details from other online salary platforms (www.sports-reference.com, www.spotrac.com). For individual player performance (i.e., player input), player ratings were acquired from the website *Whoscored* (www.whoscored.com). Players' on-field statistics, team performance, coach records were collected from *FBREF* (www.sports-reference.com) and *Transfermarkt* (www.transfermarkt.com).

3.4.2 Strategic Roles

In this chapter, instead of merely examining the pay dispersion of entire team rosters (*n=3773*), which is a common approach in previous studies (e.g., Coates et al., 2016; Franck & Nüesch, 2011), the sample consisting of 11 players with the highest number of starts in the observed seasons (*n =1555*) was also tested. The rationale for this approach is that it allows us to focus on individual teams' strategic core roles, since within a given season, they confront a greater share of the team's challenges, manage a larger portion of the workload compared to other roles (e.g., substitutes), and play a central role in the team's overall workflow (Humphrey et al., 2009). In professional sports, players consistently included in starting lineups are often categorized as key players with a disproportionately pivotal impact

on the overall team performance (Zhang et al., 2017). In the EPL, where each team played 38 league matches during each season, using the end-of-season statistics to define teams can exclude factors that influence players' availability for line-ups, such as injuries, suspensions, transfers, and tactic rotations. This chapter, thus, in addition to the entire team roster, examines the players who played a central role in terms of teams' final performance in the specific seasons under consideration.

3.4.3 Measure of Pay Dispersion

Instead of looking at unconditional pay dispersion to conduct the present study, the construct of pay dispersion was refined following Trevor et al.'s (2012) empirical strategy. Dispersion in explained pay (DEP) and dispersion in unexplained pay (DUP) were obtained by estimating a salary equation conditioned on player inputs as follows:

$$LnSalary_{it} = AP_{it-1} + BX_{it-1} + CI_{it} + \varepsilon_{it}, \tag{3.1}$$

where *LnSalary* denotes player i's Consumer Price Index[20] adjusted salary (logged) in season t and P is a matrix of values from the performance-based input (i.e., player rating from *Whoscored*) from year t–1.[21] *X,* is a vector of legitimized salary-dispersion creating factors including players' experience in other "Big 5" leagues and market factors (i.e., positions) while I is a matrix of year dummies, captures the season fixed effects. ε denotes an error term reflecting the residual for player i in season t. According to Trevor et al.'s (2012) conceptualization, derived from Equation 3.1, *DEP* is the variance of expected players' salaries within a team, while *DUP* is the variance of the residual terms.

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[20] British Consumer Price Index adjusted salary, with year of 2015=100.
[21] Regarding player ratings, 35.8% (1351 out of 3773) in the entire roster sample and 25.4% (401 out of 1581) players in the top 11 sample did not compete in the league in season t-1, respectively. Therefore, league average ratings were assigned to these players. In terms of player's salary, 4.43% (167 out of 3773) and 1.64% (26 out of 1581) players had no salary information in two samples and were excluded from the analyses.

In addition to individual performance, experience is widely accepted as a legitimate factor contributing to individual differences in pay (Shaw & Zhou, 2021). More specifically, when examining the context of professional soccer, prior research has emphasized players' experience as a crucial factor in determining their salaries (Franceschi et al., 2023; Frick, 2007; Müller et al., 2017; Poli et al., 2022). Thus, individual players' accumulated appearances (measured by the number of matches played) in the other four "Big 5" leagues prior to year t were included as a proxy for experience. Moreover, in the labor market of soccer players, individual players' positions on the pitch are believed to influence their compensations (e.g., Frick, 2007; Müller et al., 2017). In particular, forwards receive higher compensation compared to other players (i.e., goalkeeper, defender, midfielder), attributed to their greater ability to attract crowds (He et al., 2015) and visibility (Garcia-del-Barrio & Pujol, 2007). A quick glance at the top 11 highest-paid soccer players list on Forbes reveals that 10 of them are forwards (either in the main or auxiliary position).[22] Extending to general industries, achieving team goals and objectives often requires employees to assume various responsibilities within the team, for instance, a surgeon, nurse, and anesthetist in a surgical team. These diverse responsibilities can serve as a source of legitimately dispersed pay (Shaw & Zhou, 2021). Therefore, in the present study, players' positions are considered a factor of legitimacy and are incorporated into Equation 3.1.

3.4.4 Team Performance Estimation

3.4.4.1 Ordinary Least Squares Estimation

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[22] https://www.espn.co.uk/football/story/_/id/38656368/cristiano-ronaldo-lionel-messi-lead-forbes-2023-football-rich-list

Following the previously mentioned studies that adopted a two-stage approach (e.g., Trevor et al., 2012), individual teams' on-field performance was regressed on diverse measures of salary dispersion along with other controlling variables as follows:

$$\text{WinPct}_{it} = \beta_0 + \beta_1 \text{Payratio}_{it} + \beta_2 \text{Payratio}_{it}^2 + \beta_3 \text{CoachWinPct}_{it} + \beta_4 \text{MidChange}_{it} +$$

$$\beta_5 \text{Dispersion}_{it} + \beta_6 \text{Payratio}_{it} \times \text{Dispersion}_{it} + \beta_6 \text{Payratio}_{it}^2 \times \text{Dispersion}_{it} + \gamma_{it}, \quad (3.2)$$

where *WinPct*$_{it}$ is the winning percentage of team *i* during season *t*.

First, following previous studies of pay dispersion in the field of professional team sports, in terms of pay level, individual teams' relative wage bills and its squared term for *Payratio* and *Payratio*[2] were included, representing the ratio of team *i*'s total payroll to the league average in the observed seasons (e.g., Bykova & Coates, 2020). Moreover, as prior research provided evidence that coaching quality affects soccer team performance in domestic leagues (e.g., Galdino et al., 2021), team *i* coach's performance (*CoachWinPct*) was incorporated, defined as a coach's career winning percentage in the league prior to season *t*. Finally, mid-season coach change was included in the analyses, with *MidChange* equals to one if team *i* experienced a coach change during the season *t* (e.g., Huang et al., 2022). Equation 3.2 was estimated using Ordinary Least Squares (OLS) analysis with two-way fixed effect and variables were centered to test the moderating effect.

3.4.4.2 Stochastic Frontier Model Analysis

Another way to look at the effect of player's salary dispersion on team performance is to examine teams' production efficiency as the analysis portrays how individual teams perform to their production potentials (Jewell & Molina, 2004). Stochastic Frontier Model (SFM) is a common technique to understand the production and technical efficiency of teams (Lee,

2014) and has been employed in different sports leagues around the world (e.g., Hofler &

Payne, 2006; Huang et al., 2022; Jewell & Molina, 2004; Kahane, 2005). In consistent with

previous studies, to measure team production and technical efficiency, a Cobb-Douglas

production function expressed in the following form was considered:

$$Y_{it} = \beta' X_{it} + (v_{it} - u_{it}), \tag{3.3}$$

where Y_{it} denotes team production (i.e., winning percentage). X_{it} is a vector of team

production determining the same factors as those outlined in Equation 3.2.

With respect to the error terms, there are two different components in an SFM

analysis to distinguish accurately between inefficiency and random variation in production.

The first component, v_{it}, is a random error term assumed to be iid ~ N (0, σ_v^2). The second

component, u_{it}, is uncorrelated with X_{it} and a non-negative random error term assumed to

be independent and following a normal distribution that is truncated at zero.

Correspondingly, as it relates to production inefficiencies, the focus here is u_{it}, which

captures the differences between actual team output and potential team output given certain

production inputs (Kahane, 2005). In other words, SFM examines how salary disparity

(DEP/DUP) affect an individual team's production efficiency in terms of generating higher

winning percentage, holding team inputs constant (i.e., team pay level and coaching quality).

Consistent with prior studies conducted in context of team sports, in Equation 3.3 Battese and

Coelli's (1995) model was used to simultaneously examine the production inefficiency and

determinants regarding team on-field success. All variables entering Equation 3.3 are in

logarithm.

3.5   Results and Discussion

Table 3.1 presents variable descriptions and summary statistics used in both the OLS and SFM analyses. In the present samples, the mean of *WinPct* is 0.38, meaning on average, teams win 14 out of a possible 38 games at the end of the season. As it relates to coaching quality, the sample indicates on average coaches win one third of the games they have been in charge in the league. In terms of a mid-season coach change, approximately one-third of the incumbents left their position during the season. As indicated by the correlations presented in Table 3.2 and 3.3, there is preliminary evidence supporting a positive relationship between DEP and individual team sporting success measured in winning percentage.

Empirical results from OLS estimations are presented in Table 3.4. Regarding the influence of pay level on team performance, differences exist in two compositions of teams. Specifically, consistent with Humphrey et al.'s (2009) findings, the estimated coefficients of pay level indicate financial resources (i.e., salaries) invested in individual teams' strategic or key players are rewarded as the teams achieve improved performance. However, the benefit comes with a cost, as the squared term of pay level is statistically and significantly negative from M6 to M10. The results indicate teams spending more on their key players may outperform their competitors, but at a decreasing rate. This observed pattern aligns with findings in other professional sports leagues, such as the NHL (Depken & Lureman, 2018). Consequently, it is imperative to recognize that there are limitations to the degree to which higher salaries can attract, retain, and motivate individual employees, which in turn may impact team performance.

Table 3.1 Summary Statistics (n=140)

Variables	Description	Entire Team Roster		Top 11 with Most Starts	
		Mean	SD	Mean	SD
WinPct	Team winning percentage	0.383	0.167	0.383	0.167
Payratio	Team total payroll to league average	1	0.534	1	0.601
CoachWinPct	Coach winning percentage prior to the season	0.331	0.208	0.331	0.208
MidChange	Mid-season coach change (Yes=1, No=0)	0.336	0.474	0.336	0.474
DEP	Salary dispersion can be explained by player performance	0.213	0.139	0.128	0.088
DUP	Salary dispersion cannot be explained by player performance	1.061	0.868	0.24	0.226

Table 3.2 Pairwise Correlations (Entire Team Roster)

Variables	1	2	3	4	5	6
1. WinPct	1.000					
2. Payratio	0.716***	1.000				
3. CoachWinPct	-0.053	0.023	1.000			
4. MidChange	-0.440***	-0.140*	-0.000	1.000		
5. DEP	0.589***	0.697***	-0.093	-0.111	1.000	
6. DUP	0.051	0.199**	-0.008	0.081	0.030	1.000

*$p<0.1$, ** $p<0.05$, *** $p<0.01$

As anticipated, the coefficients corresponding to DEP from M2 and M7 in Table 3.4 revealed a positive correlation between explained pay dispersion and on-field team performance, providing support for H3.1. In simpler terms, teams with higher pay dispersion that is legitimately created by various individual differences (e.g., individual performance, experiences, responsibilities) tend to achieve better results on the field. To provide further clarity, according to the findings from M2 and M7 from Table 3.4, a two-standard-deviation increase in DEP would result in an additional win. Considering the highly competitive nature of the league, this additional victory could potentially have a significant impact on determining the league champion as well as the teams facing relegation. A notable example

from the 2018/19 season illustrates this point. Manchester City managed to secure the league title by a mere one-point margin over Liverpool. Meanwhile, Brighton & Hove Albion narrowly escaped relegation by a two-point lead ahead of the team in 18th place in the league standings. These instances demonstrate how crucial even a single extra win can be in the context of such fiercely contested competitions.

Table 3.3 Pairwise Correlations (Top 11 Players with the Highest Number of Starts)

Variables	1	2	3	4	5	6
1. WinPct	1.000					
2. Payratio	0.732***	1.000				
3. CoachWinPct	-0.053	0.004	1.000			
4. MidChange	-0.440***	-0.164*	-0.000	1.000		
5. DEP	0.500***	0.577***	-0.131	-0.008	1.000	
6. DUP	0.008	0.031	0.106	-0.057	0.031	1.000

*$p<0.1$, ** $p<0.05$, *** $p<0.01$

Regarding H3.2, it predicted DUP either has a negative (H3.2a) or no effect (H3.2b) on team performance. Based on the estimation results from M3 and M8, no statistically significant impact of unexplained pay dispersion was found. Thus, the results indicate the relationships between DEP/DUP and team performance align with the findings of Trevor et al. (2012) in their study on the NHL, and they are not contingent upon team compositions as both entire team rosters and strategic core roles within teams were examined in the current research.[23]

Regarding H3.3, to address the interaction between pay dispersion and pay level, the focus is on M4–M5 and M9–M10 in Table 3.4. Specifically, the moderating effect of DEP varies depending on how a team is constructed. When considering the entire team roster (M4

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[23] Contrary to the results reported by Trevor et al. (2012), the present study did not uncover any evidence of non-linearity regarding DEP and DUP.

and M5), the estimated coefficients of interaction terms failed to achieve statistical significance at any conventional levels. However, turning to the teams comprised of strategic core players, the scenario is different. In M9 and M10, the results indicate DEP has a positive moderating effect regarding relationship between pay level and team performance. In Figure 3.1, the moderating effect of DEP is shown. The relationship between pay level and team performance was positively moderated by DEP, evident in the shift of the inflection point from the dashed to the solid curve. Thus, H3.3 is only partially supported. The different patterns observed in the samples of entire roster and strategic core player regarding the moderating effect of explained pay dispersion are plausible. It should be noted although it was predicted that explained pay dispersion can accentuate the effect of salary premiums, this phenomenon should be more pronounced when examining employees with a higher level of competency (Akerlof & Yellen, 1986; Yang & Klaas, 2011). Considering the present study, it is plausible that players who do not regularly participate in the starting line-up may not view receiving identical salaries to the core players as equitable. Instead, they might perceive the pay differences as just and legitimate. This perception could stem from the fact that the frequent starting players are likely to possess a higher skill level and are considered best choices given various factors such as team tactics, player injuries, and suspensions, at least from the perspective of the coaches. Furthermore, as discussed by Humphrey et al. (2009), allocating additional financial resources (i.e., salaries) to the teams' strategic core roles improves overall team performance. Thus, when examining the entire rosters, the positive moderating effect associated with higher pay level in the model of top 11 line-ups (i.e.,

strategic core roles) may be canceled out as more non-core roles (e.g., substitutes) are

included.

Table 3.4 Ordinary Least Squares Estimation Results (n=140)

	Entire Team Roster					Top 11 with Most Starts				
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
Payratio	0.181	0.110	0.194	0.157	0.163	0.184*	0.164	0.185*	0.229*	0.232*
	(0.154)	(0.170)	(0.153)	(0.174)	(0.186)	(0.107)	(0.111)	(0.108)	(0.124)	(0.123)
Payratio^2	-0.082	-0.063	-0.087	-0.075	-0.077	-0.069**	-0.066*	-0.071**	-0.066*	-0.064*
	(0.054)	(0.056)	(0.054)	(0.054)	(0.056)	(0.033)	(0.033)	(0.033)	(0.035)	(0.034)
CoachWinPct	0.055	0.074**	0.052	0.074**	0.066*	0.059*	0.072**	0.061*	0.079**	0.076**
	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)	(0.034)	(0.031)	(0.033)	(0.033)	(0.034)
MidChange	-0.102***	-0.098***	-0.100***	-0.098***	-0.097***	-0.101***	-0.103***	-0.102***	-0.108***	-0.110***
	(0.020)	(0.019)	(0.020)	(0.020)	(0.020)	(0.020)	(0.021)	(0.020)	(0.022)	(0.023)
DEP	----	0.190*	----	0.146	0.127	----	0.191*	----	0.104	0.073
	----	(0.108)	----	(0.123)	(0.136)	----	(0.112)	----	(0.083)	(0.086)
DUP	----	----	-0.008	----	-0.004	----	----	0.038	----	0.040
	----	----	(0.010)	----	(0.010)	----	----	(0.023)	----	(0.027)
Payratio×DEP	----	----	----	0.483	0.625	----	----	----	2.196*	2.365**
	----	----	----	(1.000)	(0.953)	----	----	----	(1.146)	(0.992)
Payratio^2×DEP	----	----	----	-0.147	-0.206	----	----	----	-0.746*	-0.796**
	----	----	----	(0.361)	(0.345)	----	----	----	(0.383)	(0.326)
Payratio×DUP	----	----	----	----	0.024	----	----	----	----	0.151
	----	----	----	----	(0.139)	----	----	----	----	(0.323)
Payratio^2×DUP	----	----	----	----	-0.020	----	----	----	----	-0.074
	----	----	----	----	(0.048)	----	----	----	----	(0.127)
R^2	0.314	0.344	0.319	0.347	0.368	0.325	0.342	0.332	0.376	0.389
Adj.R^2	0.261	0.287	0.260	0.280	0.285	0.273	0.286	0.275	0.312	0.310
F	7.033***	6.373***	6.736***	11.919***	28.892***	8.984***	7.426***	12.706***	7.606***	19.402***

*Standard errors in parentheses. * p<0.1 ** p<0.05 *** p<0.01*

The lower part of the SFM results table contains information regarding the

relationship between team production efficiency and salary dispersion ("Technical

Inefficiency"). This part of the SFM results is of particular interest to the present research. To

interpret the results of team production efficiency, a negative coefficient suggests an

improvement in the generation of outputs, implying that as the variable increases, the

inefficiency of team production decreases.

Based on the estimated coefficients of the main variables from in Table 3.5, it is

obvious an increase in an individual team's DEP enhances team production efficiency, while

DUP shows no significant effect. Once again, these results provide support for H3.1 and

H3.2b. However, these conclusions contradict the findings of Jewell and Molina (2004), who

proposed salary inequality is not associated with team production efficiency. This

inconsistency might be attributed to the different conceptualizations and operationalizations

employed regarding salary inequality in these two studies.

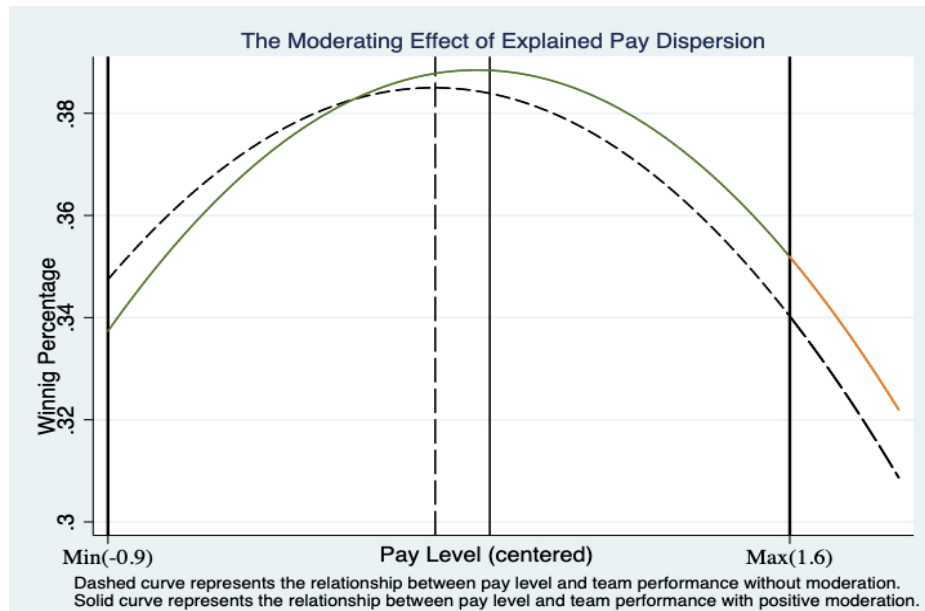Figure 3.1 The Moderating Effect of Explained Pay Dispersion

Table 3.5 Stochastic Frontier Model Estimation Results

Variables	Entire Team Roster	Top 11 with Most Starts
Team Production		
LnPayratio	0.489***	0.499***
	(0.053)	(0.110)
LnPayratio^2	0.213***	0.180
	(0.046)	(0.128)
LnCoachWinPct	-0.268***	-0.135
	(0.052)	(0.120)
MidChange	-0.412***	-0.370***
	(0.047)	(0.061)
Technical Inefficiency [a]		
LnDEP	-0.098*	-0.164**
	(0.059)	(0.084)
LnDUP	-0.028	0.093
	(0.069)	(0.072)
N	111	111
v_{it}	0.000	0.138
u_{it}	0.376	0.299
$u_{it}^2/(v_{it}^2 + u_{it}^2)$ [b]	0.999	0.824

Note: [a] A negative sign means team production inefficiency reduces (i.e., efficiency increases).

[b] Percentage of error variance due to technical inefficiency.

Standard errors in parentheses. * *p<0.1* ** *p<0.05* *** *p<0.01*

Table 3.6 lists the first ten and last ten teams in terms of team production efficiency

estimated from the top 11 sample of Table 3.5. The average efficiency of all teams across all

years is 0.683. This value indicates, on average, EPL teams should win 68% of the games

they play during a season (i.e., 26 games), considering various team production inputs such

as team relative payroll, coaching quality, and mid-season coach change. Looking at

individual teams' efficiency rankings in different years reveals some expected results.

Among the top ten teams in terms of efficiency ranking, the majority of them achieved their

best performances in the league. For instance, within the current sample, Leicester City demonstrated the highest production efficiency in the 2015/16 season by playing close to its full potential and utilizing all available resources. This exceptional performance led them to secure their first and only league title after narrowly avoiding relegation in the previous year. Similarly, Tottenham, Liverpool, Newcastle, and Crystal Palace also showcased their best performances in the EPL during the time period of the sample. However, for the bottom ten teams in terms of team production efficiency, most of them faced relegation, with Manchester City experiencing its worst league standing in recent years.

Table 3.6 Team Production Efficiency Ranking

Year	Club Name	Final League Position
First Ten Teams		
2015	Leicester	1
2016	Tottenham	2
2018	Manchester City	1
2017	Manchester City	1
2019	Liverpool	1
2019	Burnley	10
2013	Newcastle	10
2013	Crystal Palace	11
2014	Crystal Palace	10
2018	Manchester United	6
Last Ten Teams		
2019	Bournemouth	18
2016	Middlesbrough	19
2015	Manchester United	4
2016	Manchester City	6
2013	Aston Villa	15
2013	Hull City	16
2015	Norwich	19
2018	Huddersfield	20
2016	Sunderland	20
2015	Aston Villa	20

3.6 Implications

3.6.1 Theoretical Implications

The theoretical implications of the present study are three-fold. Firstly, by incorporating alternative conceptualizations of pay dispersion and considering the composition of playing squads, as well as employing different estimation methods, this chapter expands upon the methodology of explained pay dispersion, addressing the call made by Trevor et al. (2012) for future studies to explore the relationship between pay dispersion, productivity, and team performance.

Secondly, in addition to individual performance, individual experiences and responsibilities (i.e., market factors) were considered to justify the dispersed compensations observed among team members. As Shaw and Zhou (2021) argued, while performance has traditionally been the primary criterion for legitimizing dispersed pay, it is crucial for future research to explore other dimensions of legitimacy. Therefore, the present chapter extends the examination of factors contributing to the legitimacy of pay dispersion.

Thirdly, an important boundary condition related to explained pay dispersion was tested. Theories in social sciences are not applicable without the consideration of boundary conditions (Busse et al., 2017). From the perspective of equity and expectancy theories, explained pay dispersion is believed to benefit team performance, since employees view legitimate salary dispersion based on their individual performance as equitable. Furthermore, it is important to acknowledge that pay dispersion may interact with other human resource practices to influence team performance (Show & Zhou, 2021). In this chapter, the moderating role of pay dispersion in relation to the relationship between pay level and team performance was examined. By simultaneously considering pay level and pay dispersion, two

fundamental factors in designing employee compensation systems (Brown et al., 2003), the aim of this chapter is to refine the construct of (un)explained pay dispersion, enhance the accuracy of the relevant theory, and promote its generalizability across different contexts (Busse et al., 2017). In addition, since the estimation results regarding the interaction terms between pay level and explained pay dispersion vary in two samples, it emphasizes the significance of considering members' roles within the teams when examining the concurrent consequences of different compensation strategies.

3.6.2 Practical Implications

Several practical implications that are applicable to sport and general industries can be derived potentially from the estimation outcomes generated from this chapter. Firstly, the findings suggest in highly interdependent work settings, even a dispersed pay structure can effectively sort and motivate employees if the remuneration policy is designed to reward individual performance, experience, and considers market factors.

Secondly, to establish a legitimate dispersed pay structure that accurately identifies and measures individual contributions, managerial administrations should design and implement performance assessment systems that can effectively evaluate employee performance and communicate the advantages of such a pay structure (Trevor et al., 2012). Furthermore, as aligning pay with individual performance, individuals are incentivized to maximize their efforts and contribute to the overall productivity of the team. Therefore, for teams and organizations across various domains, it is possible to improve production efficiency by implementing a compensation structure that effectively connects employees' salaries to their individual performance while maintaining consistent team production inputs.

Thirdly, the interactive effect of team relative payroll and salary disparity indicates the importance of simultaneously considering pay level and (explained) pay dispersion while designing the compensation system, as these two factors have been proved to elicit motivation and sorting effects on attraction and retention of high performing talents (Brown et al., 2003). Specifically, to further reap the benefits associated with higher pay level on team performance, organizations should consider reasonably increasing legitimatized pay dispersion (e.g., link more closely to individual performance) for strategic core employees who are responsible for handling the majority of tasks and play a pivotal role in achieving organizational goals.

3.7 Limitations

This chapter has several limitations that provide valuable directions for future research. Firstly, the analysis was conducted using data from a single prestigious soccer league, which restricts the generalizability of the findings. To enhance the understanding of the overall impact of pay dispersion on team performance and to apply the (un)explained pay dispersion method more extensively, it is necessary to compare the findings with data from other leagues and sports.

Secondly, in the present chapter factors related to within-team heterogeneity, such as players' national diversity and coach–player cultural distance, were not incorporated. However, prior research has demonstrated diversity plays a significant role in team performance in sporting context (Lee & Cunningham, 2019). Viewed in this way, when examining the effect of pay dispersion on team performance, future studies could consider these factors by incorporating them as moderation terms into regression models.

Thirdly, the team composition in this chapter was based on players' roles, specifically starters. Exploring different team compositions could provide further insights into the topic. For example, in today's environment, teams are becoming more diverse in terms of employees' demographic features, such as, gender, race, nationality, tenure. Thus, it would be interesting to look at the effect of (un)explained pay dispersion in different team settings. One way to conduct this line of research would be incorporating the concept of team faultlines (Lau & Murnigham, 1998) into pay dispersion literature to capture the joint effect of pay dispersion and other diversity features simultaneously.

Lastly, another missing factor in the present study is players' contractual status. Frick (2011), using a dataset from German top-flight soccer league, demonstrated contractual status plays significant role in impacting player performance. Specifically, individual players' performances tend to improve as their current contracts approach expiration. Since the current research decomposed pay dispersion based on individual performance, it is reasonable to assume contract-related factors, such as whether a player is in the last the current contract, may affect his/her salaries by influencing his/her performance on the field, thereby affecting resultant pay dispersion. Therefore, if proper information on players' contract statuses is available, another way to enhance this study is to include it in the salary-determination equation.

3.8 Conclusion

The analyses revealed compelling evidence supporting a positive association between salary dispersion attributed to a variety of legitimacy and team success. Conversely, salary dispersion that cannot be explained by these legitimacies was found to have no significant

impact on team performance. Additionally, the results from SFM estimations indicated that higher levels of explained pay dispersion contribute to enhanced team production efficiency, while unexplained pay dispersion exhibited no significant effect.

Furthermore, in this chapter, interaction between team pay level and pay dispersion was examined. The findings provided evidence that, up to a certain threshold, a greater level of explained pay dispersion can positively moderate the relationship between pay level and team performance. This highlights the importance of considering boundary conditions in further understanding the impact of pay system on team performance outcomes.

Chapter 4

The Synergistic Impact of Team Faultlines Comprising Surface- and Deep-Level Diversity Features on Team Performance, and the Moderating Role of Members' Shared Team Tenure and Leader's Multicultural Experience

4.1 Introduction

Given the growing reliance on teamwork and the progressively diversifying workforce within organizations (Mathieu et al., 2019), researchers and practitioners are confronting both the challenges and the opportunities in understanding human resource management trends along with assisting managers to make optimal personnel decisions in order to enhance team performance and efficiency (Lazear & Shaw, 2007; Longley, 2018). Specifically, the attention of both researchers and professionals has been notably drawn to team diversity as a pivotal factor shaping team processes and, consequently, team performance (Post et al., 2021; Roberson, 2019). As discussed earlier in chapters 2 and 3, the impact of different attributes of diversity within teams on their performance is identified as a "double-edged sword" (Horwitz & Horwitz, 2007, p. 988).

In general, the majority of the empirical literature on team diversity focuses on unpacking how individual differences in terms of a single attribute within teams (e.g., age) affect team performance while overlooking the fact that multiple attributes (e.g., age and nationality) can impact final team outcomes simultaneously (Thatcher & Patel, 2012). Deriving from the seminal work by Lau and Murnighan (1998), yet another line of research moved beyond the influence of a single diversity attribute and attempted to capture the synergistic effect of multiple types of team heterogeneity. This line of research adopted the

perspective of team faultlines, which are defined as "hypothetical dividing lines that may split a team into subgroups based on one or more attributes" (Lau & Murnighan, 1998, p. 328).

The early research incorporating the team faultlines perspective focused on surface-level diversity features such as age and race (Thatcher & Patel, 2012). By focusing on surface-level diversity features, this research stream initially ignored both deep-level diversity (e.g., attitudes, values) and the combined effects of surface- and deep-level diversity (cf. Rico et al., 2007). Later research revealed how the alignment of different individual attributes within teams provided additional insight into how team heterogeneity impacts team processes and outcomes (Bezrukova et al., 2009; Lau & Murnighan, 2005). In other words, the different combinations of team faultlines may vary in terms of their influences on team performance (e.g., Hutzschenreuter & Horstkotte, 2013; Post et al., 2021; Shin & You, 2023; Thatcher, 2013). Thus, the present chapter asks the following research question: *What is the joint effect of team faultlines comprised of both surface- and deep-level diversity attributes on teams' final outcomes?*

In addition, even though the majority of relevant studies demonstrated a negative relationship between demographic team faultlines and performance (Thatcher & Patel, 2012), several scholars found mixed results (Gibson & Vermeulen, 2003; Lau & Murnighan, 2005). Hence, the inconsistencies existing in the literature on the effects of team faultlines warrant further investigation with respect to potential boundary conditions through moderator exploration (Busse et al., 2017). To be specific, in this chapter, the role of team members'

shared team tenure and team leaders' multicultural experience are examined in terms of mitigating the potential detrimental impact associated with team faultlines on performance.

As mentioned in Chapter 1, professional sports mirror the workforce changes in general industries such as increased workforce diversity. This mirroring provides an advantageous context for conducting organizational research, including studies related to diversity issues (Lee & Cunningham, 2019; Szymanski et al., 2021; Wolfe et al., 2005). Recent research using European soccer contexts looked at organizational issues such as cultural diversity and pay disparity. For example, Ingersoll et al. (2017) found culturally diverse teams tended to outperform less diverse teams, while Della Torre et al. (2014) identified a positive relationship between player salary dispersion and individual on-field performance. While there has been significant research effort dedicated to studying individual team diversity features, the relative scarcity of research examining the combined effect of multiple team diversity attributes simultaneously underscores the importance of adopting the perspective of team faultlines in relevant studies (Stahl & Maznevski, 2021).

By analyzing a dataset from the top division of Italian soccer, Serie A, this chapter investigates how team faultlines influence on-field seasonal team performance. Specifically, the strength of team faultlines is gauged by the alignment of team heterogeneity, encompassing individual players' distinctions in terms of age, race, nationality, and salary. This comprehensive approach captures the collective impact of team faultlines stemming from both surface- and deep-level attributes of team diversity.

Based on the results from several estimations, a higher level of faultlines strength is identified as a hindrance to on-field team performance when accounting for both surface- and

deep-level heterogeneity attributes. However, the negative connection between team

faultlines and team performance can be mitigated by a higher level of members' shared team

tenure, which facilitates the exchange of tacit knowledge among team members and fosters

the augmentation of communication and interactions within the team. Furthermore, the team

leader's multicultural experiences, which are linked to communication competence and

knowledge sharing, play a pivotal role in magnifying the moderating effect of members'

shared team tenure on the relationship between team faultlines and team performance. These

findings underscore the significance of accounting for critical moderating factors when

comprehending and managing team dynamics, particularly when assessing the impact of

team faultlines on team performance.

4.2 Theoretical Background and Hypotheses Development

4.2.1 Team Faultlines and Team Performance

Differing from the general paradigm on team diversity, which primarily focuses on the

effects of the dispersion of different attributes within a team, the perspective of team

faultlines emphasizes the influences related to the alignment of these diverse attributes. Lau

and Murnighan (1998) defined team faultlines as hypothetical dividing lines that can

potentially split an existing group into two or more subgroups, and highlighted studying a

single diversity attribute at a time may potentially overlook the impact of another attribute or

the interacting effect of two or more attributes. An illustrative example has been provided in

Table 1.2 of Chapter 1 (p. 13), where Group 3 and Group 4 have the same diversity measure

score. The former exhibits higher strength in team faultlines, suggesting conventional team

diversity research and metrics may not fully capture the simultaneous effects of different

attributes that may influence team performance. Hence, investigating the implications of a

diverse workforce through the lens of team faultlines becomes beneficial, as it considers

various dimensions of diversity simultaneously and can capture effects that go beyond single-

demographic diversity (Lau & Murnighan, 2005; Thatcher & Patel, 2012).

Unlike the existing literature on the main effects of single-attribute or single-

dimension measures of team heterogeneity that found inconclusive results (e.g., Bell et al.,

2011; Horwitz & Horwitz, 2007; Williams & O'Reilly, 1998), the main effects of team

faultlines were consistently found to be harmful to final outcomes (Liu et al., 2019; Mathieu

et al., 2019; Thatcher & Patel, 2012). The negative relationship between team faultlines and

team performance can be attributed to several underlying reasons, including increased levels

of conflict and competition among team members, as well as a deterioration in

communication between subgroups (Bezrukova et al., 2016; Lau & Murnighan, 1998). These

undesirable effects are more pronounced when team faultlines highlight identity-based

subgroups, such as cliques comprised of domestic players and foreign players on a soccer

team, which in turn impairs overall cohesiveness (Carton & Cummings, 2012; Meyer et al.,

2014).

Similar to team diversity research, the social categorization perspective (Tajfel, 1978;

Tajfel & Turner, 1979; Turner, 1987) and similarity-attraction paradigm (Byrne, 1971) serve

as the foundation for most team faultlines research studies when explaining the formation of

team faultlines and their negative impact on team processes and outcomes (Bezrukova et al.,

2016; Lau & Murnighan, 1998; Thatcher & Patel, 2012). Specifically, the social

categorization perspective illustrates why certain team members categorize themselves and

others based on salient differences in demographic attributes, while the similarity-attraction

paradigm explains why individuals tend to align with similar members to create subgroups

within the team (Thatcher & Patel, 2012). These theories highlight the challenges associated

with distinctiveness or differences in a diverse team, including impaired social integration

and cohesion, which can lead to unfavorable outcomes (Mannix & Neale, 2005).

Consistent with Lau and Murnighan's (1998) conceptualization, later studies

examining the relationship between team faultlines and team performance often focused on

overt demographic individual differences, known as surface-level diversity, within teams

(e.g., Lau & Murnighan, 2005; Meyer et al., 2015). Empirical works demonstrated strong

team faultlines, which were derived from team members' demographic features, can lead to

impaired team performance. For instance, Bezrukova et al. (2016) utilized a dataset from

Major League Baseball (MLB) to investigate how group- and organizational-level faultlines,

comprising players' surface-level attributes, affect team performance using a multilevel

theory approach.[24] In that study, the authors considered players' age, race, and nationality as

drivers of team faultlines. The estimation results revealed team faultlines had a negative and

statistically significant effect on sporting performance. Sporting performance was

operationalized by both subgroup players' performance metrics (i.e., group-level

performance) and the number of games won by a team in the regular season (i.e.,

organizational-level performance), respectively. Similarly, Hutzschenreuter and Horstkotte

(2013) investigated the impact of team faultlines, which were composed of age and

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[24] Multilevel theory explains how attributes of individuals, groups, and organizations on one level of analysis
can influence outcomes on other levels (Klein & Kozlowski, 2000). For example, individual demographic
diversity and their alignment can affect team-level performance.

nationality, within top management teams. Their study concluded bio-demographic team faultlines had a detrimental effect on team performance.

In addition to demographic diversity features (i.e., surface-level diversity), team faultlines can be comprised of any type of team diversity including non-demographic features such as personality characteristics and geographic work location (Lau & Murnighan, 1998; Thatcher & Patel, 2012). For instance, Molleman (2005) examined how surface-level (demographic attributes) and deep-level (personality) team faultlines influenced team processes separately, and found the effects varied depending on the type of team faultlines. In line with Lau and Murnighan's (1998) argument, surface-level team faultlines hurt team cohesion and increased intra-team conflict. In terms of deep-level team faultlines, although the main effect was insignificant, it was associated with increased level of intra-team conflict. They also noted when team autonomy was high, the intra-team conflict impacted team functioning and effectiveness.

The present chapter incorporates the non-demographic team diversity feature of pay dispersion. In the field of professional sport, pay dispersion in players' salaries is prevalent (Gelade, 2018) and is considered a representative of deep-level diversity (Lambert & Bell, 2013; Pfeffer & Langton, 1993) due to its influence on individuals' attitudes. These attitudes, in turn, can impact individual and team performance. For instance, by analyzing a data set from academic institutes, Lambert and Bell (1993) found salary dispersion has a negative impact on faculty members' satisfaction, which is positively related to research productivity.

As discussed in Chapter 3, Adams' (1963) equity theory posits individuals make social comparisons by calculating the ratios of their inputs (e.g., effort) to outputs (e.g., pay)

and comparing those ratios to other referents. People perceive inequity or unfairness when these ratios are not in balance and subsequently change their input (e.g., reducing personal effort), outcome (e.g., negotiating higher pay) or exit from the field (Downes & Choi, 2014). Building off equity theory, Levine (1991) argued compressed pay structures sustain and stimulate cohesiveness. In firms where teamwork is essential, increased cohesiveness enhances total firm productivity. Researchers adopting this perspective hypothesized pay dispersion is negatively related to team performance (Conroy et al., 2014), particularly within an interdependent work setting (Trevor et al., 2012). Thus, pay dispersion could be considered deep-level diversity.

According to Carton and Cummings (2012), different types of team faultlines can coexist within the same team and cause multiple subgroups. Consequently, team members' demographic features may create identity-based subgroups while differences in pay may elicit resource-based subgroups. At the same time, when various types of subgroups emerge, it is possible that team outcomes can be influenced by multiple inter-subgroups processes simultaneously (Carton & Cummings, 2012). For example, in Rico et al. (2007), the simultaneous effect associated with team faultlines comprised of individual heterogeneity in terms of educational background (i.e., demographic attribute/surface-level diversity) and conscientiousness (i.e., personality attribute/deep-level diversity) was demonstrated to have a detrimental impact on team performance regarding decision-making task.

Given that demographic team faultlines and pay dispersion seems to negatively affect team performance, I predict an increased strength of team faultlines based on these diversity

features (i.e., surface- and deep-level) will negatively impact a soccer team's on-field success.

Hypothesis 4.1 (H4.1): The combined effect of team faultlines based on surface- and deep-level diversity leads to a decrease in overall team performance.

4.2.2 The Moderating Role of Members' Shared Team Tenure

Based on the analysis presented in Chapter 2, the moderating effect of shared team tenure on the relationship between team cultural diversity is evident, since the concept of shared team tenure can be linked to two key aspects: tacit knowledge and team members' communications and interactions, as highlighted by previous studies (e.g., Berman et al., 2002; Harrison et al., 1998, 2002).

Teams in major European soccer leagues have become more culturally heterogeneous when defined by players' nationality (Gelade, 2018). Prior research demonstrated players from different countries and/or cultures possess nation-specific skills (Brandes et al., 2009; Kahane et al., 2013) or tacit knowledge, which is "stored in the individuals' cognitive schemata and is hard to express" (Hadjimichael & Tsoukas, 2019, p. 677). Empirical research in team sports provided supporting evidence regarding a positive tacit knowledge–team performance nexus using the time that players had with a focal team as a proxy of such knowledge and understanding (Berman et al., 2002; Humphrey et al., 2009). As Berman et al. (2002) argued "[a]s players interact on the same team over time, they increase team performance and perhaps build a competitive advantage through group-level tacit knowledge." (p. 18). Soccer is also a team sport requiring high level of coordination among

players fielding difference positions, thus, tacit knowledge should play a more significant role in terms of improving on-field performance (Shamsie & Mannor, 2013).

Shared team tenure, as a proxy of time, is a critical moderator in diversity-related research (e.g., Harrison et al., 1998, 2002). The length of time team members spend together may reduce the negative effects related to surface-level diversity (e.g., nationality) on team performance, since individuals gain more experience of working and collaborating with each other over time (Harrison et al., 1998, 2002). Therefore, when players spend more time together, it is plausible they noticed their initial stereotypes or biases about "outgroup" members were incorrect. As a consequence, the negative effect resulted from previous social categorization process may decrease (van Knippenberg & Schippers, 2007).

Although players from different countries/cultures possess inherent tacit knowledge that is beneficial to overall team performance, it does take some time for such benefits to emerge within a diverse team (Earley & Mosakowski, 2000; van Knippenberg et al., 2004, 2020). Consequently, it is possible for heterogeneous teams to outperform their homogeneous counterparts in the long run. In addition, the level of familiarity among group members significantly influences their performance (Gruenfeld et al. 1996). Specifically, when members are more acquainted with one another, they tend to be more open in sharing unique information and knowledge, which ultimately enhances the overall performance of the team. Therefore, over time, in a culturally diverse team, individual members can benefit from others' tacit knowledge, which can be shared within the team and enhance team performance.

In research examining team faultlines, time also plays an important role. Mäs et al. (2013) proposed team members sharing one or more similar demographic attributes within

homogeneous subgroups created by team faultlines can be viewed as crisscrossing actors and can promote inter-subgroup socialization as well as integration if the team faultlines strength is not maximally strong. Therefore, the effects related to team faultlines will decrease as time passes. Empirically, Georgakakis et al. (2017) demonstrated shared team tenure between a firm's CEO and top management team members positively moderated the negative relationship between team faultlines strength and team performance.

Given abovementioned arguments and empirical evidence, team members' shared team tenure, acting as a proxy of time, is expected to moderate the team faultlines–performance relationship:

Hypothesis 4.2 (H4.2): Shared team tenure will mitigate the negative effect associated with team faultlines comprised of surface- and deep-level diversity on team performance.

4.2.3 The Moderating Role of Leader's Multicultural Experience

In the exploration of team diversity and team faultlines, it is imperative for researchers to acknowledge the significant role team leadership plays as a moderating factor as underscored by Raithel et al. (2021). Notably, variations in leaders' multicultural experiences exert a considerable influence on their ability to guide teams, thereby shaping team performance (Lu et al., 2022; Maddux et al., 2021).

For instance, Lu et al. (2022) illuminated the effect of leaders' multicultural experiences on team performance by analyzing multiple context, one context of which was from the English Premier League. Specifically, their findings unveiled the breadth of a coach's multicultural working experiences, gauged by the number of foreign countries a coach had worked in, has a conducive impact on individual teams' performance in the league.

This influence is particularly pronounced for teams with a higher level of players' national diversity. Lu et al. (2022) further noted that the mechanism underpinning the improvement of team performance through leaders' multicultural experiences lies in their heightened communication competence, since these experiences furnish leaders with an enhanced awareness of variances in cognitive aspects such as values, customs, and beliefs stemming from the diverse backgrounds of team members. It is this heightened awareness that equips multicultural leaders with the ability to communicate more effectively with team members from a number of origins.

Peeters et al. (2021) asserted coaches working abroad have the opportunity to gain tacit knowledge pertaining to team management, which can subsequently be applied upon assuming a new position in a different country. The broader perspectives acquired by multicultural leaders, informed by their familiarity with diverse cultures, can prompt teams to explore opportunities for learning and glean informational advantages emanating from culturally diverse team members (Raithel et al., 2021). As a result, leaders' multicultural experiences correlate with their capacity to extract and harness culture-specific tacit knowledge possessed by individual team members (Vora et al., 2019), thereby critically contributing to amplified team performance. Moreover, Eisenberg and Mattarelli (2017) proposed that leaders with multicultural working experiences can effectively operate as multicultural brokers, who possess the capability to comprehend and address distinct subgroup identities that emerge from various dimensions of diversity. In this sense, these multicultural leaders hold the potential to navigate and alleviate subgroup identity challenges

that might surface due to team faultlines, thus, nurturing an environment encouraging both explicit and implicit knowledge exchange within teams (Eisenberg & Mattarelli, 2017).

Given that leaders' broad multicultural experiences act as catalysts for effective communication and knowledge sharing within teams, it is plausible to anticipate the following:

Hypothesis 4.3 (H4.3): A leader's multicultural experience will further enhance the positive moderating effect of shared team tenure regarding the team faultlines–team performance relationship.

The above-mentioned hypotheses were tested below.

4.3 Empirical Setting

As mentioned in Chapter 1, in contrast to the closed system in major North American professional sports leagues, European soccer leagues are considered open leagues. In these open leagues, top-ranking teams are eligible to participate in pan-European leagues with varying levels of competition, while teams at the bottom positions relegate to lower-tier leagues. In the case of Serie A, teams finishing in the top four places in the league standings qualify directly for the UEFA Champions League group stage, while the fifth and sixth-placed teams qualify for the UEFA Europa League group stage.[25] In the meantime, the three lowest-placed teams at the end of the season are relegated to the lower league.

Demographic heterogeneity in terms of age, ethnicity, and nationality is assessed within diversity literature generally (Mannix & Neale, 2005), and is a possible contributor to team faultlines among professional team sports specifically (Bezrukova et al., 2016). In the context

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[25] The qualification berths for UEFA Europa League may also depend on the ranking of the domestic cup winner.

of European soccer leagues, the number of non-domestic players recruited by individual

clubs increased since the "Bosman ruling" in 1995.[26] According to the website

Transfermarkt[27], in the 2019/20 season, 343 players (62%) competing in the Italian Serie A

are foreigners. Meanwhile, mature and young players often play on the same team making

age another observable difference. The roster for FC Juventus in the 2019/20 season is an

example. The team had 41-year-old Italian goalkeeper Gianluigi Buffon who spent 17 years

on the team and a 19-year-old Dutch defender, Matthijs de Ligt. De Ligt began his first

season with the club and in Serie A after transferring from the Netherlands. In this example,

team faultlines can be formed potentially based on the alignment of players' demographic

differences and identity-based subgroups may be created subsequently (Carton & Cummings,

2012).

Another feature of professional sports relates to pay dispersion (Gelade, 2018).

Considering European soccer leagues, in addition to individual performance, players on the

same teams receive different amount of remunerations based on a variety of factors, such as

age, race, nationality (e.g., Bryson et al., 2014; Della Torre et al., 2018; Szymanski, 2000). In

the Serie A, for instance, FC Juventus signed Cristiano Ronaldo in 2018, paying him the

second-highest salary in the soccer world at € 31 million per year. This amount was four

times that of any other player in the division in that season (Jones, 2019). This hierarchical

pay structure may contribute to the deep-level diversity in terms of players' values or beliefs

(Lambert & Bell, 2013; Pfeffer & Langton, 1993), which may influence individual players'

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[26] The ruling eliminated the transfer fees for players who are out of contract with their old teams and wish to move to new teams within and between European Union (EU) countries. It also removed the restrictions on the number of foreign players who can play for a team (Binder & Findlay, 2012).

[27] A German-based website that offers soccer-related information, such as scores, results, statistics, transfer news, and fixtures.

and overall team performance on the field (Shaw, 2014). Therefore, in this chapter, in addition to players' demographic diversity (i.e., surface-level) features, the measure of team faultlines incorporates the dispersion of players' salaries to capture the potential effect associated with deep-level diversity attribute.

4.4 Data and Methods

To test the hypotheses pertaining to team faultlines and team performance, this research examines the final end-of-season performance in the Italian Serie A from the 2013/14 season to the 2019/20 season. The unit of observation is a team-season.

4.4.1 Dependent Variable

While in the previous chapter, team winning percentage was used as the dependent variable, in this chapter, drawing on previous research conducted in the context of European soccer leagues with a focus on an individual team's on-field performance (e.g., Bykova & Coates, 2020), the dependent variable is an individual teams' natural logarithm of points per game (*LnPts*) at the end of the observed season.

4.4.2 Independent Variable

The independent variable in the present study is team faultlines strength. To calculate team faultlines strength for each season and individual teams, demographic and salary information were collected for 3,429 players in this period of time.[28] Sources for this information include *Transfermarkt*, *Sport-reference*, and *La Gazzetta dello Sport*, where player and team information were collected from the first two websites and players' salaries obtained from the third.

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[28] There are 3,790 players listed on *La Gazzetta dello Sport* during the sample period in total and players without appearances during an observed season were excluded from analyses (n=361)

4.4.2.1 Measure of Team Faultlines Strength

The previous literature included various measures of team faultlines strength. The algorithms proposed by Thatcher et al. (2003) and Zanutto et al. (2011) are most widely used in past research (Meyer et al., 2014; Thatcher & Patel, 2012). The latter has also been applied in a sports-related study (e.g., MLB; Bezrukova et al., 2016). However, two limitations make these measures inappropriate for the present study. First, Meyer and colleagues (Meyer & Glenz, 2013; Meyer et al., 2014) pointed out the aforementioned algorithms assume the focal team can only be categorized into two subgroups.[29] Thus, these measures would underestimate the team faultlines strength resulting from more than two homogeneous subgroups. In the present sample, the number of subgroups varies from 2 to 6. Second, these two measures are suitable if the team size is less than ten, which would then make it inappropriate for soccer because teams usually have a total roster of more than 20 players.

In line with Shin and You (2023), the present research adopted the average silhouette width faultlines clustering (ASW; Meyer & Glenz, 2013) technique as the appropriate way to measure a team's faultlines strength. ASW is considered a more versatile method regarding team faultlines strength calculation (Meyer & Glenz, 2013; Meyer et al., 2014).[30] Two steps are required to obtain team faultlines strength through the algorithm of ASW (Meyer & Glenz, 2013; Meyer et al., 2014). The first step is to apply cluster-analytic methods to classify a set of start configurations (i.e., a set of subgroups) for the clustering procedure for a given team. In the second step, the optimal solution is identified by permuting team members

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[29] Subgroups denote segments within a team that are relatively homogeneous created by team faultlines.
[30] All related measures of team faultlines can be achieved automatically by running different R packages (http://www.group-faultlines.org) provided by Meyer et al. (2014).

through each start configuration and retaining the configuration yielding the maximum ASW value. ASW denotes the average of all team members' individual silhouette widths, which represents quantitatively how well a team member fits into subgroup A in comparison to subgroup B. The solution reaching the maximum ASW value (i.e., the optimal solution) indicates the configuration is identified as having the maximum within-subgroup homogeneity and maximum between-subgroup heterogeneity according to the alignment of the multiple attributes (i.e., player's age, race, nationality and salary in the present study). The maximum ASW value then is retained to represent the team faultlines strength. An ASW value of 1 indicates a strong team faultlines strength, splitting a team into two or more homogeneous subgroups based on the alignment of multiple attributes of team diversity. In contrast, a value of 0 implies no existence of faultlines, either due to no variation in attributes (i.e., all team members are homogeneous in terms of every attribute) or extreme variation so that attributes do not align at all (i.e., all team members are heterogeneous in terms of every attribute).

Hypothesis 4.1 predicts the combined impact of team faultlines incorporating both surface- and deep-level diversity is detrimental to team performance, suggesting that as the value of ASW increases, team performance decreases.

4.4.3 Moderating Variables

In relation to testing the moderating effect of team members' shared team tenure and the leader's broad multicultural experience, two variables were constructed. Firstly, inspired by Berman et al. (2002), shared team tenure (*Tenure*) was conceptualized as the number of years each player had been a part of the focal team by the end of the observed season. To measure

this team experience, it was weighted by the number of matches a player competed in during the season. From there, a team average was then calculated for each team-season observation. Secondly, following the approach of Lu et al. (2022), to assess the leader's broad multicultural experience as another related moderator, the variable *CoachFor* was operationalized as the number of foreign countries in which a coach had worked. In Maddux et al. (2021) the breadth of multicultural experience is defined as the number of foreign countries someone has experienced. They further noted "broad multicultural experiences appear to affect interpersonal outcomes because they activate *comparative* processes, providing an increased tendency or ability to compare and contrast similar situations across different cultures, make relative judgments, and understand situations that involve interactions between two or more people" (Maddux et al., 2021, p. 363, italics in original). Therefore, in the present study, it is reasonable to assume that coaches that have worked in more foreign countries have had greater exposure to different cultures, values, beliefs, and ways of communication (Lu et al., 2022), which in turn may lead to improved coaching effectiveness.

4.4.4 Control Variables

The present study includes a number of control variables based on relevant literature to control individual team characteristics. To begin, an individual team's total payroll to league average in the observed season (*Payratio*) and its squared term (*Payratio²*) were included to control for team quality, as a higher relative payroll is anticipated to contribute to team success while exhibiting a diminishing effect (Bykova & Coates, 2020). Next, the possible effect of mid-season coach change on team performance was accounted for by incorporating

a dummy variable (*Mid*) equaling one if such a case happens during the season for the observed team (Audas et al., 2002; Bykova & Coates, 2020). A negative sign is expected as players and new coaches need time to adapt each other (Audas et al., 2002). Furthermore, managerial ability, proxied by the number of games a coach had won in the Serie A prior to the observed season (*CoachWinA*), was included (Kahane et al., 2013). Intuitively, coaches with better previous winning records, *ceteris paribus*, should be able to enhance on-field team performance. Finally, a variable representing a soccer team's historical performance was considered, measured by the consecutive number of seasons it had participated in the top division before the current observed season (*ClubYrs*).

To isolate the potential effects associated with team faultlines, overall team heterogeneity in terms of players' age, race, nationality, and pay, was controlled. To be specific, diversity was operationalized by standard deviation (age; *AgeSD*), the Blau index of race (*BlauR*) and nationality (*BalauN*), and coefficient of variance (pay; *Cov*) based on the research of Harrison and Klein (2007).

4.4.5 Empirical Specification

To investigate the impact of team faultlines on a team's on-field performance and the moderating effect related to shared team tenure and leaders' multicultural experience, Equation 4.1 was estimated by the Generalized Estimation Equation (GEE) as repeated observations of the same teams during the sample period were included. In the present study, the result from a normality test failed to reject the null hypothesis of a normal distribution for the dependent variable. Therefore, following the work of Narayan et al (2021), for all models

estimated, a Gaussian (i.e., normal) distribution, an identity link function, and an

exchangeable correlation structure were specified.

$$LnPts_{it} = \beta_0 + \beta_1 TeamFau_{it} + \beta_2 Tenure_{it} + \beta_3 TeamFau_{it} \times Tenure_{it} + \beta_4 CoachFor_{it} +$$

$$\beta_5 CoachFor_{it} \times TeamFau_{it} + \beta_6 Tenure_{it} \times CoachFor_{it} + \beta_7 TeamFau_{it} \times Tenure_{it} \times$$

$$CoachFor_{it} + \beta_8 Payratio_{it} + \beta_9 Payratio_{it}^2 + \beta_{10} CoachWinA_{it} + \beta_{11} ClubYrs_{it} + \beta_{12} Mid_{it} +$$

$$\beta_{12} BlauN_{it} + \beta_{13} BlauR_{it} + \beta_{14} AgeSD_{it} + \beta_{15} Cov_{it} + \varepsilon_{it} \tag{4.1}$$

The variable of interest regarding testing H4.1 is the estimated coefficient of β_1 in

Equation 4.1, which is the value of ASW (i.e., team faultlines strength) that is dependent on

the alignment of multiple attributes of diversity within the team (i.e., $TeamFau_{it}$).

According to H4.1, a negative and statistically significant estimated coefficient is expected.

As it relates to examining the moderation of shared team tenure (i.e., $Tenure_{it}$), given that

H4.2 predicts team members' shared tenure on the same team will mitigate the negative

effect associated with team faultlines, a statistically significant and positive coefficient of β_3

is expected. Finally, to test H4.3, a three-way interaction term (i.e., $TeamFau_{it} \times$

$Tenure_{it} \times CoachFor_{it}$) enters into the model with an expected significantly positive sign

for β_7.

Before proceeding to the analyses, all continuous variables were mean centered to

reduce multicollinearity and more accurately examine the interaction terms.

4.5 Results

Table 4.1 and Table 4.2 display the summary statistics and pairwise correlations between the

variables used in this research, respectively. A cursory examination of Table 4.2 reveals a

significant negative correlation between team performance and the strength of team

faultlines. This correlation points to a potential relationship between these variables, which may have implications for the overall performance of individual teams in the league.

Table 4.3 presents the results from the GEE estimations regarding main variables of interest in the present study.[31] As hypothesized in H4.1, a negative relationship between team faultlines strength and subsequent team performance was expected. In M1, the estimated coefficient of team faultlines strength, represented by *TeamFau*, is found to be negative and statistically significant, thus providing support for H4.1.

Table 4.1 Summary Statistics (n=140)

Variables	Description	Mean	SD	Min	Max
LnPts	Natural logarithm of points per game	0.253	0.37	-0.804	0.987
TeamFau	Team faultlines strength measured by average silhouette width	0.561	0.106	0.302	0.822
Payratio	Individual teams' payrolls to league average in the observed season	1	0.83	0.184	4.539
BlauN	Within-team Blau index of player's nationality	0.732	0.158	0.199	0.926
BlauR	Within-team Blau index of player's race (1=White, 0=non-White)	0.308	0.109	0.067	0.485
AgeSD	Within-team standard deviation of player's age	4.669	0.629	3.188	6.315
Cov	Within-team coefficient of variation of player's salary	0.605	0.150	0.321	1.294
CoachWinA	The number of games a coach had won in the Italian Serie A prior to the observed season	52.264	55.936	0	262
Mid	Mid-season coach change (1=Yes, 0=No)	0.414	0.494	0	1
Tenure[a]	Shared team tenure	51.531	15.314	21.556	94.083
CoachFor	The number of foreign countries a coach had worked in prior to the observed season	0.336	0.926	0	6

Note: [a] It is measured by the mean of years (weighted by the number of matches a player participated in the observed season) that each player has with the team at the end of the season.

As it pertains to H4.2, it was hypothesized that the negative relationship between team strength and team performance would weaken with higher levels of shared team experience. Supporting H4.2, the coefficients related to the interaction term (*TeamFau×Tenure*) in M3 and M6 of Table 4.3 are significantly positive. Therefore, H4.2 was supported in our sample.

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[31] As a robustness check, variables contributing to team faultlines composition (i.e., BlauN, BlauR, AgeSD, Cov) were excluded from the models. The results regarding the main effect of team faultlines strength and respective moderating remained the same.

To further visualize the moderating effect of shared team tenure, the interaction effect obtained from M3 at one standard deviation above and below its mean was plotted (see Figure 4.1). A simple slope test indicated when the level of *Tenure* was low (one SD below the mean), the relationship between team faultlines and on-field team performance was significantly negative (b=-1.300, t=-3.60, p<0.001). However, once *Tenure* increased (one SD above the mean), the negative pattern became statistically insignificant (b=-0.409, t=-1.48, p=0.139). Therefore, the negative effect associated with team faultlines arising from both surface- and deep-level diversity attributes is mitigated when team members' shared team tenure increases, providing additional support for H4.2.

Table 4.2 Pairwise Correlations (n=140)

Variables	1	2	3	4	5	6	7	8	9	10	11
1.LnPts	1										
2.TeamFau	-0.441***	1									
3.Payratio	0.706***	-0.344***	1								
4.BlauN	0.416***	-0.823***	0.358***	1							
5.BlauR	0.321***	-0.594***	0.401***	0.542***	1						
6.AgeSD	-0.171**	0.115	0.018	-0.222***	-0.085	1					
7.Cov	0.113	-0.037	0.327***	0.035	0.057	0.057	1				
8.CoachWinA	0.427***	-0.282***	0.442***	0.351***	0.292***	-0.115	0.184**	1			
9.Mid	-0.469***	0.030	-0.200**	-0.009	0.009	0.176**	-0.024	-0.097	1		
10.Tenure	0.496***	-0.182**	0.495***	0.176**	0.157*	0.179**	0.122	0.403***	-0.121	1	
11.CoachFor	0.149*	-0.215**	0.143*	0.232***	0.080	-0.149*	0.066	0.035	-0.023	0.074	1

Note: * p<0.1 ** p<0.05 *** p<0.01

Regarding H4.3, the interactions involving team faultlines strength, shared team tenure, leaders' broad multicultural experiences, and a three-way interaction term were included in M5 and M6, respectively.[32] While the main effect of the coach's broad multicultural experience is found to be insignificant (M5), it does exacerbate the moderating effect of shared team tenure with regards to the team faultlines–team performance

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[32] Similar to Lu et al. (2022), the depth of leaders' multicultural experiences (measured by the number of years a coach had spent in a foreign league) had no impact on team performance.

relationship, as the coefficient of the three-way interaction term is positive in M6. Thus, H4.3 was validated. To comprehend the nature of this interaction, a simple slope analysis was conducted. To test whether the effect of shared team tenure on team performance differs depending on the level a leader's broad multicultural experience, as depicted in Figure 4.2, the contrast between slope of lines 4 and 2 (b=1.810, z=2.70, p=0.007) was statistically significant, providing additional evidence in terms of supporting H4.3.

4.6 Discussion

Directing future agendas for team heterogeneity research, Stahl and Maznevski (2021) maintained researchers must look beyond one source of diversity within heterogeneous teams. The perspective of team faultlines provided to be useful in terms of addressing this issue. Nevertheless, the extant team faultlines literature focuses mainly on the alignment of demographic diversity such as gender, age, and race (i.e., surface-level diversity) within teams. Although illuminating, this stream of research may fail to notice the synergistic impact pertaining to other forms of team faultlines (i.e., deep-level diversity) on performance (Post et al., 2021; Thatcher, 2013).

The present chapter utilized teams within the top division of Italian soccer as a research context to investigate the effect of team faultlines on individual teams' on-field performance. As it relates to the composition of team faultlines, the nuanced measure moved beyond simple demographic features by incorporating deep-level attribute of players' diversity generated from statuses of pay. Based on the estimation results, a negative relationship between team faultlines strength and team performance (H4.1) was identified. Specifically, in M1, for each one-unit increase in team faultlines strength, the dependent

variable decreased by 69.6%. To contextualize this finding, in reference to the average of the dependent variable, this reduction equates to an approximate 8-point change in final league standings.[33] Eight points is the equivalent of approximately three victories as teams earn three points for a victory. These additional points can potentially determine outcomes as significant as the league title, relegation, or qualification for pan-European competitions.

Table 4.3 Estimation Results from Generalized Estimating Equations

	Team Faultlines and Team Performance (DV: LnPts)					
Variables	M1	M2	M3	M4	M5	M6
TeamFau	-0.696**	-0.678**	-0.784***	-0.694**	-0.681**	-0.855***
	(0.272)	(0.282)	(0.300)	(0.271)	(0.281)	(0.287)
BlauN	-0.016	0.001	-0.103	-0.009	0.035	-0.068
	(0.237)	(0.241)	(0.239)	(0.238)	(0.242)	(0.249)
BlauR	-0.343	-0.331*	-0.309*	-0.352	-0.363*	-0.349*
	(0.213)	(0.201)	(0.186)	(0.218)	(0.219)	(0.192)
AgeSD	-0.046	-0.064*	-0.079**	-0.049	-0.046	-0.070*
	(0.034)	(0.035)	(0.035)	(0.034)	(0.034)	(0.036)
Cov	-0.184	-0.158	-0.165	-0.181	-0.157	-0.128
	(0.158)	(0.157)	(0.148)	(0.157)	(0.153)	(0.139)
CoachWinA	0.000	0.000	0.000	0.000	0.000	0.001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ClubYrs	-0.000	-0.000	-0.000	-0.000	-0.000	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Mid	-0.228***	-0.227***	-0.234***	-0.227***	-0.232***	-0.239***
	(0.030)	(0.031)	(0.031)	(0.029)	(0.030)	(0.034)
Payratio	0.618***	0.546***	0.564***	0.628***	0.638***	0.596***
	(0.076)	(0.062)	(0.063)	(0.081)	(0.077)	(0.063)
Payratio^2	-0.099***	-0.088***	-0.091***	-0.100***	-0.103***	-0.100***
	(0.014)	(0.013)	(0.012)	(0.015)	(0.014)	(0.013)
Tenure	----	0.004***	0.004***	----	----	0.004***
	----	(0.001)	(0.001)	----	----	(0.001)
TeamFau×Tenure	----	----	0.024***	----	----	0.029***
	----	----	(0.009)	----	----	(0.010)
CoachFor	----	----	----	-0.015	-0.029	-0.015
	----	----	----	(0.016)	(0.021)	(0.017)
TeamFau×CoachFor	----	----	----	----	-0.271	-0.382
	----	----	----	----	(0.261)	(0.261)
Tenure×CoachFor	----	----	----	----	----	0.001
	----	----	----	----	----	(0.002)
TeamFau×Tenure×CoachFor	----	----	----	----	----	0.032*
	----	----	----	----	----	(0.018)
N	140	140	140	140	140	140
Wald's Chi-square	497.032***	891.853***	1239.865***	480.085***	529.284***	2187.724***

*Note: Standard errors in parentheses. * p<0.1 ** p<0.05 *** p<0.01*

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[33] $38 \times \{Exp(0.253) - Exp[0.253 \times (1-0.696)]\} = 7.9$

The negative effect of team faultlines on teams' final outcomes can be explained from two standpoints. First, heterogeneity with respect to players' age, race, and nationality is salient to individuals (Bezrukova et al., 2016) and identity-based subgroups are more than likely to be created if team faultlines are based on such features (Carton & Cummings, 2012).

Following these intragroup processes, levels of conflict and competition among team members will increase, while communication and cohesiveness between subgroups will decline (Bezrukova et al., 2016; Carton & Cummings, 2012; Lau & Murnighan, 1998). These dynamics, in turn, lead to impaired team performance.

Second, dispersed pay within the teams may also contribute negatively to both individual and team performance as players may perceive inequity and unfairness in relation to their ratios of efforts and rewards. Thus, the overall effect of surface- and deep-level team faultlines is detrimental to a team's final on-field performance in the season. These results are consistent with Rico et al.'s (2007) findings in which they submitted team faultlines arising from educational background (i.e., demographic attribute/surface-level diversity) and conscientiousness (i.e., personality attribute/deep-level diversity) negatively affect team performance. Given that multiple attributes of surface-level diversity and a different form of deep-level diversity were included in the present chapter to construct team faultlines, the results suggest it is the alignment of different components of team faultlines that impact team final outcomes instead of the specific attributes themselves.

In this chapter, the moderating effect of shared team tenure (H4.2) was tested in relation to the team faultlines–team performance nexus. Shared team tenure is considered a common way to represent tacit knowledge (Berman et al., 2002) and is believed to enhance

communication and interactions between team members (Harrison et al., 1998, 2002). The estimation results demonstrated the negative impact of team faultlines on team performance weakens as team members accumulate more time working together. To further understand this moderating effect, two mechanisms emerge. First, as team members communicate and interact more frequently during their everyday organizational activities, tacit knowledge is shared more thoroughly between them, contributing to the improvement of individual skills (Werner & Dickson, 2018). This improvement of individual skills, in turn, aggregates to positively influence team-level performance. Second, although Harrison and coauthors empirically revealed increased team collaboration weakened the negative effects of surface-level diversity while strengthening those of deep-level diversity over time (Harrison et al., 1998, 2002), it is possible that stereotypes or biases resulting from subgroups formed by team faultlines, comprising both surface- and deep-level team diversity, may diminish as time passes (Katz, 1982). Taken together, the effect of team faultlines on team performance may be reduced over time as team members spend more time together.

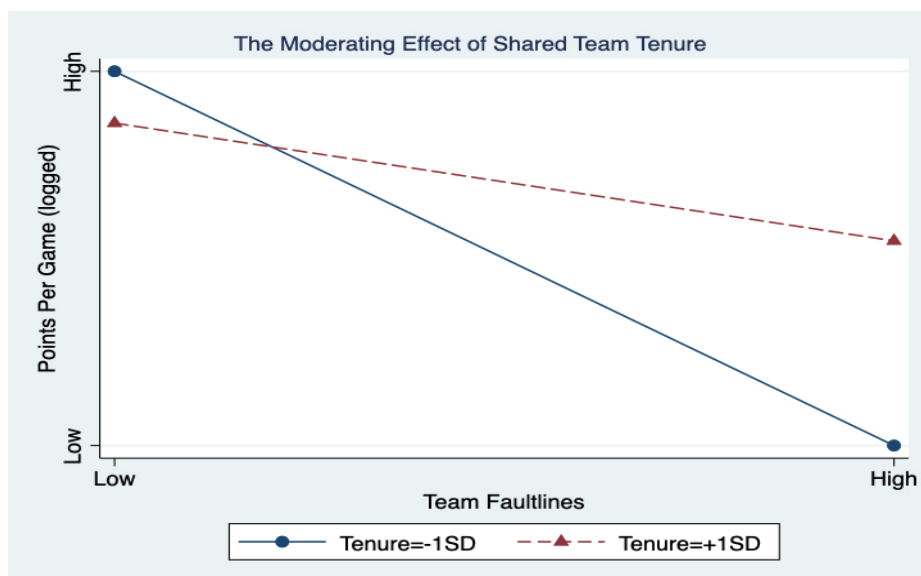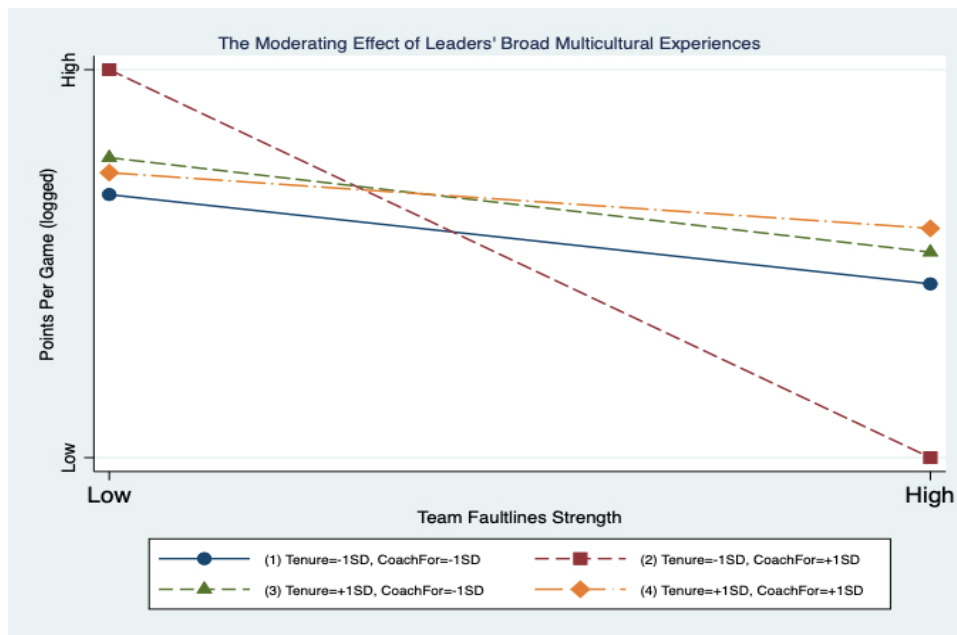Figure 4.1 The Moderating Effect of Members' Shared Team Tenure

Figure 4.2 The Moderating Effect of Leaders' Broad Multicultural Experience

Furthermore, the investigation into the breadth of a coach's foreign working experience highlights an additional crucial factor in moderating the relationship between team faultlines and team performance relationship (H4.3). Expanding upon the work of Lu et al. (2022), which primarily focused on team cultural diversity, this chapter ventures into a more complex context encompassing both surface- and deep-level team diversity characteristics to examine the significance of leaders' multiculturality regarding their previous working experiences. The estimated coefficient of a three-way interaction term indicates teams led by a coach who has had worked in more countries potentially have a greater ability to elicit and manipulate tacit knowledge within teams, in comparison to coaches with less multicultural experience.

4.6.1 Theoretical and Practical Implications

The theoretical contributions of this chapter are three-fold. First, by moving beyond the simple demographic components of team faultlines, the chapter fills a critical gap in

understanding the synergistic effect of team faultlines comprised of different team diversity attribute on team performance. To be specific, in the present chapter, team faultlines were composed of pay dispersion, which represents a feature of deep-level team diversity, as well as three factors of surface-level team diversity, including differences in team members' nationality, age, and race.

Second, the exploration of moderating variables plays a significant role in advancing our understanding of the team faultlines–team performance relationship. Specifically, investigating team members' shared tenure as a moderator sheds light on the complexity of how tacit knowledge and team member interactions may influence the impact of team faultlines on performance. Tacit knowledge can be shared among team members over time, and the longer team members spend time together, the smoother their interactions become, all of which contributes to enhanced team performance ultimately.

Additionally, the chapter expands prior research examining the interplay between a leader's multicultural experience and team cultural diversity (Lu et al., 2022). In particular, the moderation of a leader's multicultural experience is considered in the context of team faultlines. A leader's multicultural experience is prevalent in today's work environment given the trend of globalization and internationalization. The exploration of shared team tenure and leaders' multicultural experiences as moderators in the chapter serves a way to define a boundary condition, which may further develop team faultlines theory and facilitate its generalizability (Busse et al., 2017).

Lastly, despite the considerable amount of relevant work emerging in various fields of study (e.g., psychology, management) and the recognized importance of team faultlines in

sports team dynamics, such studies have been scarce in the sport management field (Emich et al., 2020). However, it is imperative for sport management scholars to embrace and incorporate various theories from other disciplines to enhance the theory's generalizability and legitimize the field of sport management in relation to other general fields.

In contemporary organizations, where the trend of heightened workforce diversity encompassing both demographic and non-demographic aspects has gained significant prominence, the current study holds several practical implications.

First, as teams become more diverse in terms of members' attributes and statues (i.e., non-demographic/deep-level diversity), team administrations should adopt a holistic view of diversity by learning to navigate issues resulting from team faultlines, which can be formed beyond simple demographic features. Second, to capture benefits while circumventing harms related to potential subgroups triggered by team faultlines, managerial policies should emphasize similarities between team members and promote overall team identification, thereby encouraging employees to concentrate on mutual goals and enhancing performance (Lau & Murnigham, 1998). The benefits of diversity should emerge more easily in the context where people have more favorable beliefs and attitudes toward diversity. Thus, mindsets favoring workforce diversity should be cultivated within the teams so that intergroup biases may be reduced, and the integration of diverse task-related knowledge may be stimulated (Guillaume et al., 2017; van Knippenberg & Schippers, 2007; van Knippenberg et al., 2004). Third, given the prevalent diversity of salient demographic features within today's working environments, organizations may consider designing and implementing a remuneration system that legitimizes the disparity in pay among team members. This

approach may serve to mitigate the potential adverse impacts stemming from the presence of team faultlines, which are formed by both team members' demographic features and pay dispersion among them. As discussed in Chapter 3, pay disparity stemming from variations in individual performance leads to employees to perceive the distributed pay as equitable.

As extended shared team tenures can mitigate the negative effects of team faultlines, it is plausible to seek policies to make a team more stable so that individual members can have more time to share their know-how and collaborate with each other. As a result, within a heterogeneous team, information-elaboration will be facilitated while the damaging influence associated social categorization will be minimized, leading to enhanced overall team performance (van Knippenberg et al., 2004). Additionally, to further mitigate the potential adverse effects arising from the demographic and non-demographic diversity attributes of team members, especially in light of the increasing trend of globalization, organizations should adopt strategies such as actively promoting the recruitment of managerial talents with extensive multicultural experiences. Alternatively, they should ensure that expatriates are provided with ample opportunities to engage in a diverse array of multicultural experiences (Lu et al., 2022).

4.6.2 Limitations

Like all other studies, the chapter has several limitations highlighting future directions for research. First, to construct team faultlines, in this chapter, players' salary statues were used as a representative of deep-level diversity, yet athletes' compensation in professional team sports can be explained by their performance making the dispersed pay structure legitimate and feelings of unfairness less an issue among team members (Trevor et al., 2012). Hence, it

would be interesting to collect first-hand information regarding how players perceive the dispersed pay structure observed in the teams and incorporate these personal views into the construct of team faultlines. In addition, to include race in the composition of demographic team faultlines, I categorized players into white and non-white based on their profile photos available online. However, this method may be problematic, since visual identification of race based on photographs can be inaccurate and subjective (Foy & Ray, 2019). Therefore, future research could consider other methods to assess player's race, reducing reliance on subjective visual identification. Second, although there was evidence that time moderated the negative relationship between team faultlines and performance by linking it to tacit knowledge and collaboration, these two factors could not be partitioned. As prior work claimed tacit knowledge is beneficial to individual development (Werner & Dickson, 2018), future studies may examine individual performance as a mediator when probing the role of shared team tenure (i.e., time). Last but not least, team tenure, as an influencing factor on team performance, according to Gonzalez-Mulé et al. (2020) can be conceptualized into different forms including additive team tenure (the one used in the present chapter), collective team tenure, and team tenure dispersion. Therefore, it would be interesting for future studies to adopt alternative measures of team tenure and examine their effects in relation to team faultlines and team performance.

4.7 Conclusion

After analyzing a dataset from the Italian first-tier soccer league, the chapter provided substantial evidence that team faultlines, encompassing both surface-level (age, race, and nationality) and deep-level (pay) diversity features have a detrimental impact on team

performance. Nevertheless, the shared team tenure among players, serving as a representation of their distinct tacit knowledge and intra-team communication, has demonstrated the potential to mitigate this negative influence. Furthermore, the breadth of multicultural experiences possessed by coaches are anticipated to enhance the positive moderating influence of players' shared tenure, since coaches with multicultural working experiences are poised to enhance their communication competencies, particularly in the context of leading culturally diverse teams. This improvement in communication, in turn, nurtures effective leadership which ultimately benefits the overall team performance. At the same time, these culturally diverse coaches, functioning as multicultural brokers, also play a pivotal role in facilitating knowledge exchange within teams, consequently further enhancing the teams' success on the field.

Chapter 5

Conclusions

According to Day et al. (2012), scholars studying individuals and teams in organizational contexts can encounter complex constraints, such as organizational boundaries, environmental contingencies, and difficulties in measuring performance. In contrast, sports, as a less conventional research context, offer a field where existing theories can be extended and challenged. Consequently, research conducted in sporting contexts leads to valuable and fresh insights for other contexts (Bamberger & Pratt, 2010; Szymanski et al., 2021). The sports context provides an interesting and informative research setting for organizational researchers and scholars to examine how individuals and groups behave and perform, along with the resulting consequences. Research topics in this area are versatile, including diversity issues, labor economics, and international studies (Kahn, 2000; Lee & Cunningham, 2019; Szymanski et al., 2021; Wolfe et al., 2005). Despite some differences that exist between sports and other organizational contexts, such as the higher compensation received by elite professional athletes compared to employees in general industries (Kahn, 2000), there are still significant overlaps between these two contexts, which makes it possible to generalize knowledge from sports to other contexts, such as work and education, and vice versa (Day et al., 2012).

5.1 Effects of Different Forms of Team Diversity

The preceding three chapters focused on the impact of two forms of team diversity, namely cultural diversity and pay dispersion, and how they interact with other individual demographic diversity factors such as race and age to influence the outcomes of teams within

the context of European soccer. Chapter 2 examined the influence of cultural diversity, represented by players' nationality, as a form of *variety* diversity, on teams' success in European men's national soccer. Using individual countries' annual international remittances sent as an instrumental variable, the results from multiple estimations suggested higher levels of cultural diversity enhanced on-field team performance. Moreover, shared team tenure, serving as a proxy for tacit knowledge and within-team communication, was found to further amplify the impact of cultural diversity on team performance.

Chapter 3 shifted the research focus to *disparity* diversity by investigating the effects of different compositions of pay dispersion on team performance. Specifically, pay dispersion was deconstructed by its legitimacy based on individual performance, experience, and market factors: explained and unexplained portions. By analyzing a dataset from the English Premier League, the study revealed explained pay dispersion exhibited a positive relationship with individual teams' winning percentage and efficiency. Moreover, when teams consisted of players with the highest number of starts during a specific season, the explained pay dispersion positively moderates the relationship between pay level and team performance. Conversely, the unexplained part of pay dispersion did not have a statistically significant impact on team performance. These findings corroborate previous research on (un)explained pay dispersion in highly interdependent work settings (Trevor et al., 2012) and offer additional evidence regarding the significance of simultaneously considering pay dispersion and other pay strategies (Shaw & Zhou, 2021; Brown et al., 2003).

In addition to examining different forms of team diversity in isolation, this dissertation investigated how various diversity factors collectively impact team performance.

In Chapter 4, by adopting the perspective of team faultlines, the study explored the effects of team faultlines encompassing surface- (nationality, age, race) and deep-level (pay) diversity attributes on the performance of individual teams in the Italian Serie A. Additionally, the combination of these diversity features involved the conceptualization and operationalization of *separation* (age difference measured in standard deviation), *variety* (nationality and race difference measured in Blau index), and *disparity* (pay difference measured in coefficient of variation) diversity, as mentioned in Chapter 1. The estimation results indicated the degree of team faultlines was negatively related to team performance. Nevertheless, team members' shared tenure within the teams was able to mitigate the adverse impact resulting from team faultlines. Moreover, team leaders' multicultural experience was found to further accentuate the moderating effect of shared team tenure, with teams led by coaches possessing more international work experiences benefiting more from the increased level of members' shared team tenure.

In the previous three chapters, various boundary conditions were explored in relation to the team diversity–team performance relationship. In Chapter 2 and Chapter 4, individuals' shared team tenure was found to strengthen the positive effect of cultural diversity and mitigate the negative impact associated with team faultlines. Therefore, the findings underscore the importance of considering team members' familiarity when examining the effect of team diversity. From a managerial standpoint, it is also important to note that in order to potentially benefit from team diversity, upper-level managers need to look at the design and implementation policies that can reduce turnover rates to potentially benefit from a broader range of task-related skills, perspectives, and experiences that generated from a

cultural heterogeneous working force. Similarly, Chapter 4 demonstrated a leader's multicultural experience could further amplify the moderating effect of team members' shared tenure, in light of the increasing trend of globalization, organizations should adopt strategies such as actively promoting the recruitment of managerial talents with extensive multicultural experiences. In Chapter 3, the interaction between explained pay dispersion and pay level was tested. Based on the estimation results, to further reap the benefits associated with higher compensations for employees who are responsible for handling the majority of tasks and play a pivotal role in achieving organizational goals, organizations should consider relating pay differences more closely to some pay dispersion-creating practices, such as individual performance and experience.

The findings from this dissertation underscore the significant impact of team diversity on performance, offering vital insights for managers in professional sports and other team-based organizations. Chapter 2 demonstrates cultural diversity among team members can positively influence team performance, particularly when combined with shared team tenure. The empirical results suggest managers should not only seek to build culturally diverse teams but also foster an environment where team members can build long-term relationships and a shared understanding. By promoting cultural inclusivity and stability within teams, managers can leverage the diverse perspectives and skills that come with cultural diversity, ultimately enhancing team performance.

Chapter 3 provides crucial insights into the management of salary dispersion within teams, specifically highlighting the significance of accounting for explained and unexplained pay dispersion. In specific, explained pay dispersion, where differences in pay are perceived

as equitable and based on clear criteria, can have a positive impact on team performance. By ensuring that dispersed salaries are well-explained by these normatively accepted factors, employees' feelings of inequity and unfairness may be minimized, fostering a more cohesive and motivated team environment.

Chapter 4 reveals the potential detrimental effects of strong team faultlines comprising both surface- and deep-level diversity features on team performance. Therefore, organizations should strive to balance diversity with strategies that bridge these faultlines, such as encouraging team stability to help promote tacit knowledge sharing and mutual understanding among diverse team members.

In contrast to prior studies asserting coach-related factors may not significantly impact soccer team performance (e.g., De Paola et al., 2012; Gómez et al., 2021), in Chapter 4 demonstrates coaches' multicultural work experience plays a vital role in mitigating the negative impact associated with team faultlines. Thus, for organizations across various industries, it is plausible to invest in leadership development programs that enhance multicultural competencies or recruit leaders with diverse backgrounds and experiences, since multiculturally experienced leaders are indispensable in managing diverse teams effectively. In addition, given the discussion in Chapter 3, it is important for organizational leaders to design and implement transparent and fair compensation policies that consider employee differences in performance, experience, and market factors to potentially capture the benefits of high pay level.

5.2 Further Development of Relevant Studies

The three papers in this dissertation project is rooted in a positivist philosophical worldview, reflecting my educational background and previous research experience. Positivism is associated with a circular process called hypothetico-deductive method, which begins with literature to first generate testable hypotheses, then design an experiment to conduct related empirical analysis with the purpose of informing theory and contributing to the extant literature (Park et al., 2020). In other words, positivism has an emphasis on quantifiable observations that can be linked to multiple statistical analyses. As it pertains to my dissertation project, figures such as player statistics, team winning percentage are investigated and examined, with the aim to explain and predict specific phenomenon (e.g., a positive relationship between cultural diversity and team performance).

However, as Frisby (2005) argued, "if we are to fully understand all dimensions of sport management, we need research to be conducted from multiple paradigms" (p. 2). Therefore, as a newcomer to the sport management field, I do not want to limit myself to a specific paradigm and aim to embrace paradigmatic plurality in my future research on team diversity, wherever it is relevant. Specifically, I acknowledge qualitative research approaches, conducted in an inductive manner and relying on various data collection sources, methods, and analytical techniques, can provide new insights and pave the way for novel theoretical directions in organizational studies (Bansal et al., 2018). From the perspective of qualitative research, researchers can draw from epistemologies focusing on subjective realities such as personal views and perceptions regarding the impact of team diversity on team process and final team outcomes, which I think will be beneficial to the further development of relevant research. In Chapter 2, for instance, when investigating the

relationship between cultural diversity and team performance in the context of national soccer teams, from the lens of interpretivism, it would be beneficial to gather and analyze firsthand coaches' perspectives and views on the relationship between players' cultural diversity and on-field team performance. In terms of exploring the consequences of diversity, van Knippenberg and Schippers (2007) argued individuals' perceptions and views on diversity may affect its effects on team process and performance. Therefore, in the context of professional sports, if a coach and/or team owner has a "diversity mindset", which refers to the understanding that (cultural) diversity may affect his/her team in a positive way, then the effect of within-team players' (cultural) diversity may be more desirable and discernable. To be specific, the effect associated with cultural diversity should be (more) positive in a national soccer team where the coach (and players) has (more) favorable beliefs about and attitudes toward cultural diversity, since they will focus on harvesting its benefits and have a better understanding of how to realize these benefits.

In the context of my future research agenda on the relationship between team diversity and team performance, my background and the availability of objective sports-related data make quantitative methods a prominent choice. For example, the Blau index was utilized as a proxy of cultural diversity among team members in Chapter 2 and 4. However, solely relying on this method may oversimply in terms of representing deep-level diversity features. Therefore, I intend to incorporate Hofstede's cultural dimensions, which may provide a more holistic representation of deep-level diversity into my future research.

Another limitation of my dissertation, which suggests avenues for future study, is the need to clarify the team process through which team diversity ultimately influences team

outcomes. For instance, in Chapter 2 and Chapter 4, I examined the moderating effect of time as a boundary condition, by linking it to tacit knowledge (Berman et al., 2002) and interpersonal communications and collaborations (Harrison et al., 1998, 2002). However, in these studies I could not clearly delineate these two factors in terms of affecting the cultural diversity–team performance relationship. Therefore, it would be interesting to investigate whether enhanced players' individual performance (e.g., ratings from *www.Whoscored.com*) can act as a mediation mechanism through which overall team performance can be improved.

Lastly, from Chapter 2 to Chapter 4, different research contexts were utilized to test a variety of hypotheses related to diversity issues. However, in order to enhance the generalizability of the results, it would be important to probe into the same topics across the "Big 5" leagues and potentially extend the research to other leagues in different countries. Equally important is the extension of these studies into other general industries, with the aim of contributing to broader discussions on diversity and team performance.

The issues related to team diversity are evident in the field of sports, but they are by no means exclusive to this domain since diversity holds significant implications for organizational life (Day et al., 2012; Wolfe et al., 2005). Sport serves as a reflection of our society, offering an effective context for conducting pertinent research. In the realm of sport management research, there is a need to investigate a single phenomenon from multiple angles, integrating viewpoints from various disciplines to position sport management as a field capable of making distinctive and legitimate contributions to broader issues (Mills, 2021). Beyond addressing practical challenges within the sports industry, sport management research can extend or refine existing theories, analyze the unique characteristics of specific

situations while drawing comparisons to others (referred to as the "Derivative Model" by

Chalip, 2006), and even uncover new theories from phenomena that have not been studied

(referred to as the "Sport-focused Model" by Chalip, 2006). Consequently, through the

analysis of datasets and samples from sports, impactful and meaningful sport management

research endeavors to merge a variety of theoretical streams and generate a fusion of ideas

relevant to managerial issues that transcend the realm of sports.

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