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Tactical Formations, Technical Tactical Performance, and Match Outcome: The Case of Ethiopian Bet King Premier Leagueteams

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**TACTICAL FORMATIONS, TECHNICAL TACTICAL PERFORMANCE,
AND MATCH OUTCOME: THE CASE OF ETHIOPIAN BET KING
PREMIER LEAGUE TEAMS**

BY

TEBIBU SOLOMON

JUNE, 2023

BAHIR DAR ETHIOPIA

BAHIRDAR UNIVERSITY

SPORT ACADEMY

DEPARTMENT OF SPORT SCIENCE

SPECIALIZATION IN FOOTBALL COACHING (MSC)

**TACTICAL FORMATIONS, TECHNICAL TACTICAL PERFORMANCE,
AND MATCH OUTCOME: THE CASE OF ETHIOPIAN BET KING PREMIER
LEAGUE TEAMS**

**A THESIS SUBMITTED TO THE DEPARTMENT OF SPORT SCIENCE, IN
PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF
MASTERS OF SCIENCE IN FOOTBALL COACHING (MSc)**

BY

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DECLARATION

This is to certify that the thesis entitled “Tactical Formations, technical tactical performance parameter, and match outcome: the Case of Ethiopian Bet King Premier League Teams”. submitted in partial fulfillment of the requirements for the degree of Master of Science in football coaching in the Department of Sport Science, Bahir Dar University, is a record of original work carried out by me and has never been submitted to this or any other institution to get any other degree or certificates. The assistance and help I received during this investigation have been duly acknowledged.

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APPROVAL OF THESIS FOR DEFENSE

I hereby certify that I have supervised, read, and evaluated this thesis titled “**Tactical Formations, technical tactical performance parameter, and match outcome: the Case of Ethiopian Bet King Premier League Teams**” prepared under my guidance.

I recommend the thesis be submitted for oral defense.

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APPROVAL OF THESIS FOR DEFENSE RESULT

As members of the board of examiners, we examined this thesis entitled **Tactical Formations, technical tactical performance parameter, and match outcome: the Case of Ethiopian Bet King Premier League Teams**” by **Tebibu Solomon Asfaw** We hereby certify that the thesis is accepted for fulfilling the requirements for the award of the degree of **“MSc in football coaching”**.

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Chairperson’s name

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DEDICATION

This thesis is dedicated to my cherished parents and families. The researcher also expressed his gratitude to everyone who helped me along the way, even with a single piece of advice, to get to this point.

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First and foremost, I would like to thank the Almighty God and his mother, Saints of Saint Holly Mariam, for letting me through all the difficulties.

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Acronyms

AFCON: African Cup of Nations

KPI: Key performance indicator

CAF: Confederation of African Football

TD: Total Distance

LWF: Left-wing Forward

CF: Center Forward

RWF: Right-wing Forward

EFF: Ethiopian Football Federation

FIFA: International Federation of Association Football

PA: Performance Analysis

UEFA: Union of European Football Associations

WC: World Cup

TTPP: Technical-tactical Performance Parameters

GS: Goal scored

GC: Goal conceded

Abstract

Performance analysis in football is used for team development, both on the training pitch with the first team and in the academy with the youth players. Data allows clubs to track how their teams are performing physically, tactically, and technically, and this can be used to measure any improvements in the match outcome with their respective formations. The ultimate purpose of this study is to investigate the relationship between tactical formation(4-4-2, 4-3-3, 4-2-3-1, and 4-1-4-1), technical-tactical performance parameters(possession, the goal scored, goal conceded, and shots on target), and match outcomes(win, draw and lose) in the Ethiopian bet king premier league 2015 E.C competition season. 16 premier league teams participated in the league and 40 from the mid-way of 120 matches of the first season were analyzed based on inclusive criteria. A purposive sampling method was applied and the design of this research was correlational. The data was analyzed using SPSS Version 23 with Pearson's product correlation movement, ANOVA, and multiple linear regression models to examine the relationship and the prediction capacity of the tactical formation, and technical-tactical performance score with match outcome. From the study variables technical-tactical performance parameters and match, outcomes show insignificant correlation over tactical formations as the level of significance of possession($p = .996$), the goal scored ($p = .340$), goal conceded ($p = .848$) and shots on target($p = .815$) for Technical Tactical Performance Parameter, as well as no significant correlation with the outcome as p value=.827, except for a variety of mean differences in ball possession. Furthermore, when the other factor in the model was held constant, the rate of goal scoring increased by one unit as the team's match outcome status increased by.575, and when the goal conceded rate increased by one unit, the winning status of the team decreased by .272, and including shots on target Goal Scored and Goal Conceded show a positive correlation with match outcomes with a p -value of .001, <.001, and .037, respectively. Finally, The researcher recommends that coaches and players should work on technical and tactical actions for better improvement and to become more successful in competition.

Keywords: *tactical formation, technical-tactical performance metrics, and match outcomes*

CHAPTER ONE

1. INTRODUCTION

1.1 Background of the Study

Football has been one of the most popular sports for a long time (Frencken et al., 2012). Likewise, Football is the most popular sport In Ethiopia. Although not one of the leading footballing nations in Africa, Ethiopia has produced some outstanding teams at both club and international levels as well as some talented individual players. The Ethiopian premier league has been an annual competition since 1948 with Saint George FC emerging as the country's leading club with 24 titles. In the present day of the Bet King Ethiopian premier league era in which the league clubs go through partial improvement and 16 clubs participate in the league, there is no Ethiopian club side that has ever won the CAF Champions League or any other international club competitions. The best performances were the semi-final places achieved by the Cotton Factory Club in 1964 and Saint George in 1967(<https://escf.co.uk/football-in-ethiopian-history/>).

The evolution of football as a sport can perhaps be best tracked by looking at the way that formations have changed (<https://www.football-stadiums.co.uk/articles/football-formations/>). As chronicled in Jonathan Wilson's *Inverting the Pyramid*, the many tactical and strategic revolutions that have occurred in soccer over the last century can be observed in the variations in formations utilized by coaches and managers over this time. For example, in the very first international match in 1872, Wilson notes that England played what looked like a 1-2-7 (one full-back, two midfielders, and seven attackers), while Scotland played a 2-2-6. As the game evolved through various rule changes (i.e., off-side rule) and professionalism (i.e., players could train full-time), so too did formations where coaches/managers set up their team's formation to best maximize the chances of their team winning while trying to minimize the chances of the opposition. Prime examples of such formations are the dour and stifling "Catenaccio", often employed by Italian teams where the emphasis is getting behind the ball waiting for the opposition to make a mistake and hit them on the counter-attack, or the dynamic and fluid "TotalFootball" introduced by Rinus Michaels through the Ajax and Dutch teams in the '60s and '70s which has evolved to the "TikiTaka" style of football Barcelona play today using a 4-3-3 formation (Bialkowski et al., 2014).

Today, the **4-3-3** is the most widely used formation by teams who look to play stylish, attacking football. It has become the go-to formation for ambitious teams. Apart from Barcelona, other teams such as Real Madrid, Bayern Munich, Liverpool, Manchester City, Ajax, and others have found massive success using this formation. Real Madrid won three Champions League titles on the trot. Liverpool similarly owes their European and Premier League success to this system, thanks to their terrific trio of Sadio Mane (LWF), Roberto Firmino (CF) -Mohamed Salah (RWF). The **4-2-3-1** may appear to be a rigid formation at first glance, but it is the perfect one for a midfield-heavy approach. Liverpool manager Jurgen Klopp is one of the first managers who demonstrated the true efficacy of the 4-2-3-1 formation. This formation was also used with considerable success at Olympique de Marseille during the time of Luis Gonzalez, Loic Remy, and Andre Ayew. In its essence, the **4-4-2** diamond formation is a 4-1-2-1-2 when broken down. (<https://www.sportskeeda.com/football/3-most-popular-football-formationstoday>). Many coaches consider the **4-1-4-1** a progression of the 4-2-3-1 and it is very well suited to teams whose strengths lie in possession play. But defensive interpretations of this system are also effective, which is why underdogs often resort to this formation (Kempe et al., 2016).

Over the years, Ethiopian clubs and national team managers in the league employ many formations that were adapted from internationally recognized league clubs like Barcelona that seem like Tiki Taka as tradition but they put on without taking their tactics, playing style, and philosophy into account. The 2013 AFCON was the major implication for the Ethiopian national team which rose and was applauded through international media by comparing them to the Spaniard Barcelona. The clubs like St George under Zerihun Shengeta, Ethiopian buna under kassaye Aragie, Siyum kebedes fassil kenema, also used the 4-3-3 formation even if they differ in their system of play. The league teams alternate between using formations like 4-2-3-1, 4-1-4-1, and 4-4-2 as plan b and first option and analyzed their team performance through this.

Over the last two decades, there has been a growing interest in match analyses of soccer. The practical value of such analyses was that well-chosen performance indicators can help coaches to identify the good and bad performances of individuals or teams. In this respect, match analysis helped identify the physiological demands of the sport, and in examining how a particular player compares to the needs of his event (Di Salvo et al., 2007). Performance analysis (PA) is a relatively new addition to the contemporary multidisciplinary sports science support services

available to high-performance/performing sports coaches (Hughes and Franks, 2008). Furthermore, PA is now commonly accepted as an integral component of the coaching process (Reeves & Roberts, 2013). The Performance of a team and an individual player can be analyzed or evaluated through different parameters. The parameters are significantly affecting the total change in the whole team's efforts and consequences. (Thongyoo & Thaneerat, 2022), try to evaluate football team performance with expected goals by using the selected initial variable consisting of 9 parameters including, win, draw, loss, Goal scored, goal conceded or against, ranking in the league, football club, opposition, and shots. Several authors used vast technical and tactical performance criteria that had an impact on match outcomes. Based on (Modric et al., 2022) study, used performance parameters like possession, shots on target, goal chances, and other indicators including match outcome. The match outcome is a primary criterion for evaluating performances in team sports, the closeness of the game (winning and losing margin) provides additional contextual information about the tactical and technical success of the competing teams (Nobari et al., 2021).

Currently in Ethiopia, match performance analysis is relatively a recent development. Formerly, Ethiopian club coaches served their teams without any supporting statistics and made most of their decisions based on a rough estimate of plain observation and experience. The game was shown live on super sport for the first time in 2019/20. This creates a lot of opportunities for the coaching staff to have access to the data of individuals and teams that enable them to enhance their performance. Furthermore, this commencement is significantly believed to change and impact the whole coaching process.

If formation was the most important variable to consider when analyzing football games, then tactical formation (4-3-3, 4-4-2, 4-2-3-1, and 4-1-4-1), technical tactical performance metrics (goal scored, conceded, shots on target, and ball possession), and match outcome (win, draw and lose) were the most important metrics used to assess team performance. Studying the relationship between tactical formation and technical tactical performance parameters, tactical formation and match outcome, the association between technical tactical performance parameters and match outcome, and how the formation and technical tactical performance parameters predict match outcome became interesting in bridging the knowledge gap and giving a clear picture to those who specifically work in the coaching area.

1.2. Statement of the problem

The purpose of this study was to explore the relationship between Tactical Formations, technical tactical performance parameters, and match outcomes: in the Case of Ethiopian Premier League Teams.

For years there have been heated discussions among coaches, players, and fans regarding which tactical team formation is the most successful. Common tactical formations include the formations 4-4-2, 4-2-3-1, 4-1-4-1, 4-3-3, or the currently prevalent 3-5-2. Unfortunately, few studies have specifically studied the effects of different tactical formations on game performance so far (Thongyoo & Thaneerat, 2022). Contradictory results are found in the comparison of different tactical formations, though. To some extent, this could be a result of the varying opposition formations and skill levels across studies. Yet, none of the studies investigated the impact of different formations have on team tactical behavior, although this is often the major decision criterion to favor one formation over another (Rein & Memmert, 2016). Different researchers try to investigate the tactical formation and game performance analysis with different variables independently. (Dobreff et al., 2019), in their work on the formation game in football, explore that Modern football was all about the physical and technical level of individual players and their intelligent (tactical) deployment. Selecting the proper team formation and shaping the game plan accordingly are essential decisions of the coach before each match.

In the domain of performance analysis in soccer, analyst and research teams support staff members with information primarily to enable understanding of performance, and to improve training regimes and decision-making. In soccer, KPIs have been combined with video analysis to inform practice (Wright et al., 2012) and evaluate the success of a team (Herold et al., 2021). Statistical performance in possession, passing, passing effectiveness, crosses, successful crosses, and on-target shoots as a parameter to predict the likelihood of success. Sometimes statistical figures may predict or correlate with success and sometimes these figures may not predict success. To this end, possession-based teams might have the chance, but, that is not the only method to score goals and win matches (Chekle, 2017). During statistical analysis of soccer performance, passing success (Castellano et al., 2012), passing, and on-target shots ((Moura et al., 2013) are the common parameters that discriminate winning and losing teams. Furthermore,

the number of crosses and the success rate of crosses are among those performance-predicting parameters.

According to the studies mentioned above, although coaches use different formations for different reasons, researchers did not demonstrate how tactical formations affect performance metrics. Researchers mainly emphasized individual performance while giving little consideration to coaches' weight on the physical, technical, tactical, and psychological demands while picking the team formations: Furthermore, they studied formation in concurrence with various variables and discussed controversial ideas over possession, shots on target, a goal scored, and a goal conceded, which is rarely affected by a win, draw, and loss of the game. There was still a comparison of tactical formations and investigation on KPI effects on success, yet didn't correlate them. This indicated that there was still a need for further investigation into tactical formations and performance analysis since these were not correlated and studied jointly.

Sufficient studies to correlate these variables had not been done. The fact that this study was the first of its kind to examine the relationship between a team's tactical formation, technical, tactical performance parameters, and match results in the Ethiopian Premier League. So, individuals who work as amateur to elite coaches and the staff who were actively involved in the coaching process found this correlation to be a significant source of knowledge. Also, a stronger grasp of tactical formation and performance analysis provides a knowledge foundation.

1.3 Research questions

1. What is the relationship between football formation and technical tactical performance parameters?
2. What is the relationship between tactical football formations and match outcome?
3. What is the relationship between technical tactical performance parameter and match outcome?
4. How tactical football formations and technical tactical performance parameter predict match outcome?

1.4 Objective of the study

This research has two types of objectives.

1.4.1 General objective

The general objective of the study was to examine the relationship between Tactical Formations, technical tactical performance parameters, and match outcome: the Case of Ethiopian bet king Premier League Teams

1.4.2 Specific Objectives

This study has the following specific objectives:

1. Determine the level of relationship between team tactical formation and technical tactical performance parameters.
2. Reveal the relationship between tactical formation and match outcome.
3. Assess the level of association between technical tactical performance parameters and match outcome.
4. Examine how the tactical formation and technical tactical performance parameters predict match outcomes.

1.5. Significance of the Study

This study has so much significance for coaches, players, sports analysts, scouts, instructors, and the media. It also has crucial importance for scholars who wish to approach the topic from a different angle and may use the study's findings as literature or as a benchmark for future research. The coaching staff highly benefited from the study's detailed information regarding their teams, players' performance, and skill in live games. Soccer coaches and scientists used the research to help them to develop and carry out targeted training plans that will maximize team performance.

1.6. Delimitation of the Study

This study was delimited geographically only in Ethiopia and conducted in the Ethiopian bet king premier league of the 2015 E.C season. It was also conducted on 16 premier league teams. Conceptually it was delimited only the relationship between tactical formation (the practical implication of spatial configuration of a football match like 4-4-2, 4-3-3, 4-2-3-1, and 4-1-4-1),

technical tactical performance parameters (including a goal scored, goal concede, possession of the game, and shots on target) and match outcome (winning, losing and draw) of the match. The researcher used the standard data that was provided by super sport live stream game analysis.

1.7. Limitation of the Study

The following factors are the limitations of the study since the researcher could not control them. This study was limited in that the physical fitness/exertion, psychological factors, and individual qualities (individual differences) were not taken into consideration due to the absence of readily available data. Additionally, focusing primarily on male Premier League games limits its applicability to other contexts and settings. Furthermore, the research was limited as it doesn't investigate the whole season match statistics.

1.8. Operational Definition of Key Terms

Formation: spatial configuration of players on paper

Tactic: a method of employing action

Tactical formation: a method of employing spatial configuration into action on the playing ground

System of play: is then formed from the basic formation and has different characteristics, depending on whether the team has possession or works against the ball (Timo Jankowski, 2015).

Performance: a process of performing a task in a football match

Performance analysis: the process of examining the performed task in the football game

Match outcome: the final result of the football game

Match statistics: numerical analysis of the team's performance during the game

Goal scored : the number of goals the team scored against the nominees

Goal conceded: the number of goals that a team conceded

Performance Parameters: evaluating components of individual and teams effort

Match outcomes: the result of every match

1.9. Organization of the Study

The research is divided into five sections. The first chapter covers the background of the study; the statement of the problem; the research objectives; the research question; the significance; the delimitation of the investigation; the limitation of the study: the definition of operational terminology; and the organization of the study. Also, the second chapter is devoted to a survey of related literature in which the study's basic words and concepts are conceived. Moreover, the third chapter concerned the study methods, including the study's area description, research approach, research design, population, sampling and sampling technique, source of data, study variables, data collection instruments, study variables, data collection procedures, and methods of data analysis. Besides, the fourth chapter covers the research results and interpretations and the discussion part goes to the fifth chapter. Furthermore, the final chapter includes a summary, conclusion, and recommendation of the results.

CHAPTER TWO

REVIEWS OF RELATED LITERATURE

2.1 A Brief History of World Football

One of the most well-liked sports in the world is "association football," sometimes referred to as "football," "football," or "Soccer." It is generally accepted that the word "football" (or "football") refers to the motion of the foot kicking a ball if we look at the origins of the word. An alternate theory holds that the term "football" originally referred to several games played on foot in medieval Europe. There are numerous references to traditional, historic, or prehistoric ball games that were played by native peoples throughout the world. It is known that the Ancient Greeks and Romans participated in a variety of ball activities, some of which required the use of the feet.

Early versions of football in England, often known as "mob football," were played between nearby towns and villages with a limitless number of people on opposing teams squaring off in large crowds. Football was transformed from a "mob" pastime into an organized team sport in England in large part thanks to the "public" schools there. (http://shodh.inflibnet.ac.in/bitstream/123456789/216/2/02_introductionj.pdf).

2.2 History of the Ethiopian Football League

As Reviewed, (2018) studied, In 1944, the first football league in Ethiopia to receive official recognition was founded. Five teams originally competed for the title, which was won by the British Military Mission in Ethiopia (BMME), representing the numerous Addis Abeba populations. The Ethiopian Cup was added the following year and, with a few breaks, has been played ever since. Mechal (now Defence Force SC) dominated Ethiopia's top-flight football in its early years. The club won six championships between the 1940s and 1950s. After St. George SC's dominance in the late 1960s, the league experienced a period of relative parity in the 1970s and 1980s. In 1997 (1990 E.C.), the Ethiopian Premier League was founded by the Ethiopian Football Federation (EFF) and the teams that comprised the highest tier of Ethiopian Football after a series of adjustments to the league during the 1990s.

The first Ethiopian Premier League season, which took place in 1997–98, was won by Ethio Electric (formerly Mebrat Hail). The next season, the league decided to add one more team,

making a total of 10. St. George S.C., perennial favorites, won their first Premier League title that year—their 16th overall. St. George won the championship once more the following year (1999–2000 season). The 2000–01 season was a standout one for the league, in large part because of Yordanos Abay, a striker with Ethio Electric. With a then-record 24 goals during his league season and a third overall championship, Abay helped Ethio Electric win its second Premier League championship. His record would hold for 16 years before being surpassed in the 2016–17 season by Dedebit striker Getaneh Kebede, who scored 25 goals. Many predicted that Ethio Electric would repeat as champions the following season (2001–2002 season), but they fell short of expectations by placing second to eventual champions St George. (https://en.wikipedia.org/wiki/Ethiopian_Premier_League).

In the 2002–03 season, the first reputable teams from outside Addis Abeba started to challenge for the Premier League championship. To win the Premier League for the fourth time (19th overall title), St. George had to defeat Ethiopian Coffee on the final day of the season. St. George S.C. had to lose for Arba Minch Textiles, a team from the southern city of Arba Minch, to triumph. Although Arba Minch Textiles' outstanding performance showed that teams from outside the capital were ready to fight in the top league once more, St. George ultimately prevailed and was able to retain the title. Teams outside of Addis Abeba saw success in the 2003–04 season, including Hawassa City S.C., led by their captain Kamal Ahmed, which was able to lift the Premier League trophy for the first time in their history. Once again, the Premier League title race came down to the final day, when Hawassa City needed to defeat Nyala S.C. to hold off rivals like Ethiopian Coffee S.C. and Trans Ethiopia. The following two seasons saw St. George S.C. dominate once more as they won their fifth and sixth Premier League titles (20th and 21st overall). When the 2006–07 season got underway, the league had 16 teams. At the end of the season, Hawassa City won their second championship in as many years, preventing St. George S.C. from completing a triple. However, St. George would continue to rule for the next three consecutive seasons. St. George would add their seventh, eighth, and ninth Premier League titles (22nd, 23rd, & 24th overall titles) under the direction of manager Mencho. One of St. George's main rivals, Ethiopian Coffee, would end their remarkable run by winning the Premier League championship in 2010–2011 (their second championship overall). However, St. George would return the next year and take the crown once more in 2011–12. However, Dedebit F.C.

would win the title for the first time in their history the following season, foiling St. George's effort at a repeat.

St. George S.C. would win 4 straight championships from the 2013–14 season through the 2016–17 season, a feat that has only previously been accomplished in Ethiopian first-division football once. Significantly, the Federation decided to add two clubs to the league, bringing the total to 16, for the 2016–17 season, up from the previous number of 14 clubs. The current 16-club league was formed after the 2015–16 season when just two clubs were demoted from the league and replaced by four clubs promoted from the Higher League. When a referee was attacked during a match between Defence and Welwalo Adigrat University on May 2, 2018, the Ethiopian Football Federation (EFF) suspended the league. League play did not resume for another two weeks despite promises made to the arbiters union that referees would soon have insurance and that previous medical expenses would be covered by the appropriate clubs. For the first time in their existence, debutants Jimma Aba Jifar F.C. won the cup on the final day of the 2017–18 Ethiopian Premier League. Jimma Aba Jifar and St. George were tied in terms of points and goal differential as of the previous day. Despite this, Jimma Aba Jifar won the championship with to a +3 goal differential advantage against St. George S.C. after winning 5-0 and losing 2-0, respectively. Following the 2017–18 season, an agreement was reached between the EFF and the Premier League teams. The increase in pay and the disrespect for local talent were two reasons given for the relocation. The COVID-19 pandemic forced the cancellation of the 2019–20 Season on May 5, 2020. No teams were expelled from the league or crowned champions this season. On December 12, 2020, the 2020–21 Season got underway in earnest. Fasil Kenema received the first-ever first-division championship for the squad on May 6, 2021 ([https://en.wikipedia.org/wiki/Ethiopian Premier League](https://en.wikipedia.org/wiki/Ethiopian_Premier_League)).

2.3 Team Tactical Formation

As (Narizuka & Yamazaki, 2019), explore, Each player collaborates with teammates and engages with rival players in competitive team sports like basketball and football (soccer). Players at the team level retain a specific formation throughout such exchanges. A team's formation structure reflects its tactics for mounting successful offenses and defenses to win. The notation "4-4-2," which denotes four defenders, four midfielders, and two forwards, is a common way to describe formations. Even though it's a handy way to loosely understand formation

patterns, such static notation is too basic to be used to analyze actual games. The following quantitative methods have been introduced.

The first illustration is based on a Voronoi region that has been created for each player and contains all of the pitch locations that are closest to that player. Naturally, this correlates to the player's field area. The fundamental properties of the Voronoi region have been studied using football and hockey games, and a modified version that accounts for a player's speed and acceleration has also been provided. A distinct type of method known as "role representation" was developed by Bialkowski et al. The "role" in this context denotes the relative positioning of each player in the formation, just like in "center forward" or "left-wing." Role representation's core tenet is that players are identified by their role numbers rather than by their identities, such as the switching of player roles during a game, in contrast to the static nature of earlier notations like "4-4-2."

2.3.1 Team Formation Analysis in Football

As Beernaerts et al., (2022), In football, teams are said to play in particular spatial arrangements known as team formations (Kaminka et al., 2003; Kuhlmann et al., 2005). "A precise structure specifying the distribution of players based on their positions within the field of play" is how a team configuration is described (Ayanegui-Santiago, 2009). Several techniques for analyzing team formations have been described in a variety of team sports, including American football (Atmosukarto et al., 2013), basketball (Lucey et al., 2014), and volleyball (Jäger and Schöllhorn, 2012), but football presents a unique set of challenges due to the fluid and dynamic nature of the game (Atmosukarto et al., 2013). It's critical for a coach to accurately assess the strengths and shortcomings of his or her squad. He or she can then select the best squad formation for a particular game (Carling, 2011). So, the chosen team configuration will depend on the anticipated team composition of the opposition, as well as the traits of the ideal formation and the individuals who are physically capable of participating. For instance, Aquino et al. (2019) investigated the impact of the used team formation on stats like ball possession. The effect of team composition on defensive passing behavior and group team movements was examined by Low et al. in 2021. Also, it has been stated that one of the crucial components of how team tactics can be used during football games is the manipulation of the player's locations on the field (Rein and Memmert, 2016). Football team formation analysis can be done in a variety of methods, but

it frequently begins with a visual study of the data and then the actual identification of the formations (Stein et al., 2016, 2018). To comprehend how team formations are used in football, Müller-Budack et al. (2019) emphasize the significance of envisioning certain situations, further highlighting the difficulty of the endeavor. Several approaches use different Key Performance Indicators (KPIs) to identify and evaluate football team formations (Memmert et al., 2017). The positions of the players on the pitch are used to calculate these KPIs. As KPIs for team formation analysis, Sampaio and Macs (2012) offered the team centroid, team entropy, a team stretch index, and the team surface area. To observe goals or other important performance indicators, Frencken et al. (2012) added the inter-team distance, or the distance between the centroids of both teams, to this.

Using the average positions of the players on the pitch, Bialkowski et al. (2014) proposed a method for the automated detection of the type of team structure employed in a game. They argue that because players switch places during a game, team structure should be studied using a dynamic rather than a static ordering of players. Using data from the whole Premier League season, Lucey et al. (2013) and Bialkowski et al. (2014) found that the English Premier League teams appeared to use more attacking team formations at home than on the road. Narizuka and Yamazaki (2019) proposed a clustering method based on the positions of the players to compare football team formations.

For sports analytics in football, some innovative techniques apply the principles of (artificial) neural networks (McCulloch and Pitts, 1943). Using a set of established reference team formations, Visser et al. (2001) employed artificial neural networks to identify the team structure of the opposing team. Ayanegui-Santiago (2009) further on this by suggesting that multiple relationships between players be taken into account when identifying team formations in football. Based on their roles in the match and typical positions, players were split into three categories (defenders, midfielders, and attackers) for this purpose. The research on team formation was then conducted using concepts from graph theory, which limited the inclusion of links to nodes within nearby groups.

Perin et al. (2013) argue that while most methodologies concentrate on quantitative measurements, these alone may not be sufficient to understand the squad composition of a game

or an entire season. Perin et al. focus on the qualitative segmentation of a football match to produce relevant temporal pieces (such as comparable defending or attacking scenarios that can then be compared). Unfortunately, qualitative squad formation analysis in football is now mostly done by human experts, which necessitates a lot of labor (Bialkowski et al., 2014). On real-size football grounds or in actual football games, several studies have also looked at team formations. But Gonçalves et al. (2017) have shown that there are substantial differences between team tactics (and subsequently team formations) of matches played on a smaller football pitch and matches played on a full pitch, recommending that research be done on official football matches. Football sports analytics has seen an increase in the significance of hybrid approaches, which use both quantitative and qualitative principles (Anguera et al., 2017).

The analysis and definition of team formation in football, however, is the focus of a very small number of mixed techniques (Frencken et al., 2012; Sampaio and Macs, 2012; Aquino et al., 2019). To assess the efficacy of the played team formation(s), these methods generally combine quantitative performance measures (such as ball possession, running speeds, or the number of shots and goals) with qualitative observations of the performed team formations. However, in the remaining sections of the study, we provide a strategy that focuses more on identifying the actual team formation than on assessing its efficacy or impact on quantitative performance indicators.

2.3.2 A tactical comparison of Formation in Soccer

Few studies have examined the impact of team formations in full-sized 11 vs. 11 or large-sided (LSG) football matches with elite players, as Memmert et al., (2019) explore. As a result, it is unclear at this time how team formations affect game performance. Using Global Positioning System (GPS), (Aquino et al., 2020), studied the differences between 4-3-3 and 4-4-2 formations in one reference team over 48 matches from the Brazilian national league. The findings showed that players performed better in 4-3-3 formation play than in 4-4-2 formations, covering more distances, and sprinting faster on average and at their maximum, according to the results. Sadly, just the attacking configuration was analyzed and the formation of the opponent squad was not taken into account.

While facing a 4-4-2 defensive system, Bradley et al. looked at team formations in 70 matches from the English FA Premier League. Although effects on various running speeds and playing

positions were discovered, the data showed no changes in the distances covered. Comparatively, to defenders playing in a 4-3-3 or 4-5-1 configuration, players in a 4-4-2 formation traveled farther. Teams playing in a 4-5-1 formation made fewer passes than teams utilizing the 4-4-2 and 4-3-3 formations.

As (Tierney et al., 2016) looked at the GPS data of five typical team formations used by Under 21 and 19 squads (4-4-2, 4-3-3, 3-5-2, 3-4-3, and 4-2-3-1). The results showed that 4-4-2 covered distances were less than 4-2-3-1's, however, 4-2-3-1's and 3-5-2's high-speed running lengths were longer than 4-4-2's. Overall, it seems that the 3-5-2 arrangement presented the greatest physiological difficulties. Another study examined the effects of the formation using video monitoring data from 45 French Ligue 1 games. The other teams in this study used formations such as 4-4-2, 4-3-3, 4-5-1, or 4-2-3-1, whereas the reference team in this study either used a 4-3-3 or a 4-5-1 configuration. The results showed that the reference team performed more passes and more touches per play when playing against a 4-4-2 compared to the other formations. When playing against a 4-2-3-1, more tackles and an increased frequency of aerial duels were observed.

Regarding physiological variations, playing against a 4-2-3-1 as opposed to a 4-4-2 was observed to result in longer distances traveled. High-intensity running analysis also revealed 4-4-2 and 4-2-3-1 formation disparities. Together, the findings demonstrate that attacking and defensive team formations have an impact on gameplay elements in top soccer.

2.4 Performance Analysis

As (Moura et al., 2013), explored The practical benefit of performance analysis is that carefully picked performance indicators can be used to identify the effective and ineffective team or individual performance. They permit comparative analysis of teams and players and assist coaches in identifying a player's strong and weak performances.

There have been a lot of studies done to prove the value of objective sports analysis and how crucial it is to the coaching process (Hughes, 1996). Systems for recording and storing information about players' actions during competitions have been created. These systems are subsequently used to define and pinpoint crucial performance components (Hughes & Franks, 1997). Some of these systems offer game-related statistics on players' activities (such as control,

passing, shots on goal, fouls, etc.) that can be used to analyze football games and reveal useful information about the performance of successful and unsuccessful teams.

Regarding the differences in performance and characteristics of build-up plays between successful and unsuccessful teams during official matches, related literature has given some contradicting findings. An earlier investigation (Garganta, Maia, & Basto, 1997) revealed that top-level European football teams frequently begin their scoring moves in their offensive third of the play, revealing a brief attacking period (10 s or less) and making few passes. These results corroborate the "direct-play" hypothesis (Bate, 1988), which advocated a game plan with fewer passes made per team possession. Some teams have had some success with this tactic, especially when moving up from English football's lower levels (Hughes & Franks, 2005). However, recent studies indicate that while playing against an imbalanced defense, counterattacks are more effective than complex attacks (Tenga, Holme, Ronglan, & Bahr, 2010a, 2010b). Yet, a prior study revealed that winning teams touched the ball more frequently than losing teams (Hughes, Robertson, & Nicholson, 1988). Recent research also indicates that successful teams try more goal attempts every game (Grant, Williams, & Reilly, 1999; Lago-Penas, Lago-Ballesteros, Dellal, & Gomez, 2010).

2.5 Soccer performance

The interaction of players' technical, physical, and tactical actions during match play contributes to football performance (Moura et al., 2013). As a dynamic sport, football necessitates a delicate balance between several performance determinants (Alves et al., 2019). Physical qualities should be taken into account because they have an impact on the technical indicators (Bush et al., 2015; Da Mota et al., 2016; Rampinini et al., 2008). Technical indicators more correctly predict a team's success (Carling, 2013).

In-game data about players' actions (such as control, passing, shots on goal, fouls, and so forth) are provided by some soccer analysis systems, and these statistics can be useful in revealing how successful and unsuccessful teams performed throughout a game (Moura et al., 2013). According to Hughes and Bartlett (2002), a performance indicator is a choice or combination of action variables intended to define some or all aspects of performance. Technical factors that affect

success in team sports like football include goals for and against, possession, shots, shots on target, corner kicks, and complete and incomplete passes.

2.6 Performance Parameters

It is essential to recognize and appreciate the pertinent parameters in order to analyze team collective performance and accomplish significant goals in football (Clemente et al., 2012). Over the past ten years, sports and exercise scientists have become more and more interested in the application of notational analysis to comprehend the numerous facets of performance in individual or team sports. It has been utilized for some objectives by many analysts working at different levels of sports performance, including technical and tactical evaluation, movement analysis, feedback providing, norm formulation, and modeling (Shafizadeh et al., 2013; Hughes & Bartlett, 2008).

Football at a higher level largely depends on some variables. For instance, in order to play football for an extended period of time, one needs to be physically fit and engage in high-intensity, intermittent exercise (Mohr et al., 2003). In this approach, football players must complete approximately 1300 actions throughout games, of which 200 must be performed with high intensity, and there will be an average of 5 seconds between each action (Bangsbo et al., 2006). Technical ability, technique knowledge, and psychological makeup still contribute to performance or success in football. The common indicators used in statistical analysis of football performance are possession, passing success (Castellano et al., 2012), and passing and on-target shots (Moura et al., 2013). These performance-predicting factors also include the number of crosses and the success rate of crosses. At the top levels of the game, good passing has been identified as one of the essential prerequisites for creating a successful team (Jankovic & Leontijevic, 2006). When compared to match data previously identified for club tournaments (Lago-Peas et al., 2010, 2011; Tenga et al., 2010a, 2010b, 2010c; Yue et al., 2014), match statistics related to victory in national team competitions were marginally different.

2.6.1. Physical fitness

Success in modern football somewhat depends on physical condition. Surprisingly, there has been a significant shift in the popularity of football during the last few decades. The players are

competing at higher intensities and undertaking more explosive motions than ever before, according to objective studies (Bradley et al. 2009; Da Silva et al. 2010).

According to Bradley et al. (2009), physical characteristics including total distance traveled and distance traveled while exerting high intensities serve as helpful performance measures. Elite soccer players travel the bulk of the distance throughout a game at a moderate intensity (Rienzi et al., 2000). 10% of the whole distance is covered on average at a high intensity (Carling et al., 2008). Depending on their position in the game, players cover varying distances while exerting high levels of effort (Bangsbo et al., 1991; Di Salvo et al., 2009; Ekblom, 1986; Rampinini et al., 2007). By gender (Ekblom, 1986; Krstrup et al., 2005), training level (Krstrup & Bangsbo, 2001), period of competition (Mohr et al., 2003; Rampinini et al., 2007), level of competition, game style, and environmental factors (Reilly, 1996), differences in high-intensity activity during a match have also been noted. Even though it only accounts for 1-12% of the overall distance traveled during a game, sprinting is one of the most significant soccer actions (Rienzi et al., 2000; Van Gool et al., 1988; Withers et al., 1982). The English Premier League, the Spanish League, the Italian League, and the Danish League are among the national leagues where researchers have focused their attention on high-intensity activities during matches (Bradley et al., 2009; Di Salvo et al., 2009). Some research on national leagues has included Champions League matches in the same data analysis (Di Salvo et al., 2007; Mohr et al., 2003; Rampinini et al., 2007).

2.6.2. Technical-Tactical Actions

In comparison to purely physical factors, technical actions can be more accurate indicators of success in football (Bush et al., 2015a; Castellano et al., 2012; Lago-Peas et al., 2010, 2011; Rampinini et al., 2009; Russell et al., 2013). According to Lago-Peas et al. (2010), ball possession could predict the winners of the 2008–2009 Spanish First Division when paired with other elements (such as shots, shoots on target, and crosses). The winning and losing teams of the 2001–2002 English Premier League have significantly different ball possession patterns, according to Jones et al. (2004). Because they distinguish match patterns more precisely than other indicators, technical indicators are crucial for match analysis (Da Mota et al., 2016).

Lago (2007) concluded that the technical and tactical indicators from the 2006 FIFA World Cup (WC) are significant factors in explaining the points earned by teams during the competition's group stage. Similar findings were made during the 2014 FIFA World Cup, which demonstrated a correlation between the likelihood of winning and counterattacks, ball possession, short passes, and average passes completed per game (Liu et al., 2015). In the same competition, Da Mota et al. (2016) concluded that although being associated with the amount of time spent in the attacking areas of the field, ball possession had no bearing on the physical demands of the games. According to Alves et al. (2019), winning teams have passing success, shoots, and shots that are on target. These findings concur with those of Liu et al. (2015), who discovered that 2014 FIFA World Cup winners demonstrated that shots and shots on target enhanced the likelihood of winning by 13% and 48%, respectively. Additionally, a prior study with comparable findings suggested that success in 2002, 2006, and 2010 FIFA World Cup contests depended on both total shots and shots on target (Castellano et al., 2012).

2.6.3. Psychological

Psychological skills and psychological status of athletes are often influenced by sports performance, and good performance can be helped by psychological therapy and preparation (Gardner & Moore, 2006; Gyomber et al., 2013, Omar et al., 2009; Zusková et al. 2010). Krane and Williams (2006) concluded that several psychological and behavioral skills and strategies (e.g., goal setting, imagery, anxiety control, and coping skills) are associated with peak performance.

2.7 Match-Related statistics

Based on Kubayi & Larkin, (2022), investigate Despite soccer's popularity in Africa (Kubayi et al., 2015), nothing is known about national teams' match performance in African competitions (Njororai, 2019; Kubayi and Toriola, 2020b). Football match analysis research is currently primarily focused on European competitions (Mao et al., 2016; Zhou et al., 2018). For instance, previous studies found that performance variables such as shots, shots on target, shots from open play, shots from counterattacks, total passes, accurate passes, crosses, through balls, corners, dribbles, and ball possession had higher averages for the winning teams than the losing teams (Lago-Peas and Lago-Ballesteros, 2011; Lago-Peas et al., 2011; Liu et al., 2015). Also, compared to winning clubs in Europe, the losing teams committed more fouls and were issued

more yellow cards (e.g., Spanish La Liga, UEFA Champions League). This demonstrates that factors connected to goal scoring and maintaining ball possession, which are attributes of successful performance in both European and international competitions, are most important to the winning teams. (Collet, 2013; Kubayi and Toriola, 2020).

The focus of the public data that is currently available on important football performance measures in Africa is ball possession during domestic matches (Kubayi and Toriola, 2019). For instance, Kubayi and Toriola (2019) noted that in the South African Premier Soccer League, the losing clubs had a larger percentage of the ball than the winning teams. The absence of analysis of the potential impact of match performance indicators that can contribute to team success, however, was a limitation of the findings. It is crucial to reevaluate not only the possession of the ball during a match but other potential game-related data that may contribute, given the dynamic nature of soccer and the requirement for analysts and coaches to be aware of the current in-game performance trends. (Oberstone, 2009; Araya and Larkin, 2013).

The variables included in the match statistics were those that had to do with scoring goals (such as shots, shots on goal, and shots from counterattacks), passing and organizing (such as passes, percentage of accurate passes, percentage of ball possession, dribbles, and percentage of successful dribbles), and defending (i.e., tackles, percentage of tackles won, fouls, and yellow cards). In a prior study, the operational definitions of these variables were presented (Lago-Peñas et al., 2011; Liu et al., 2015; Mao et al., 2016).

2.8 Coach's Perception of performance analysis

As Andersen et al., (2022), studied Performance analysis (PA) has been defined as an opportunity to objectively interpret performances within complex sports environments Fernandez-Echeverria et al., (2017) to improve the performance of individual athletes and team behavior through the delivery of meaningful and purposeful feedback (Bampouras et al., 2012; Nicholls et al., 2018). With previous research highlighting issues with the recollection and recall of previous events by coaches (Franks & Miller, 1986, 1991; Laird & Waters, 2008), there has been a significant increase in the use of PA as well as performance software solutions (e.g. Sports Code, Angles, Focus, Match Tracker, etc.), which assist the coaches' ability to recall and interpret performances (Mackenzie & Cushion, 2013; Wright et al., 2014). The use of PA allows coaches to draw upon this objective data to make informed decisions, overcoming the limitations

of observation recall (Laird & Waters, 2008). Coaches can, therefore, identify, diagnose, and correct technical and/or tactical elements of an individual's or team's performance through an objective lens (Fernandez-Echeverria et al., 2017). The data and information a performance analyst collects have also been highlighted to extend beyond technical and tactical insights into a range of other disciplines including psychology, physiology, strength and conditioning, and medical and performance lifestyle (Wiltshire, 2013). Subsequently, the prevalence and use of PA by association football coaches have increased over the last 20 years to aid the coaching and feedback process (Mackenzie & Cushion, 2013; Raya-Castellano et al., 2020; Reeves & Roberts, 2013; Sarmiento et al., 2012).

Blaze et al. (2004) discovered Computerized analysis was the most widely used technique for providing association football clubs and their coaches with unbiased information about performances. Clubs discovered the data provided accountability through unbiased observation, enabling staff and athletes to provide feedback individually, in groups, or collectively to find areas for growth. According to Groom and Cushion (2004, 2005), the usage of PA and the data gathered can: help coaches create an efficient playstyle for the team; (ii) improve their professional growth and coaching practice; and (iii) enable an in-depth analysis of their team's performances. Association football coaches continue to address areas for improvement using the data collected, although Reeves and Roberts (2013) noted the data is also. Middlemas and Harwood (2017, 2020) found that coaches used PA to enhance players' communication and self-confidence, with either coach-guided or unguided PA sessions helping to promote their capacity for self-reflection. Supporting our prior knowledge and comprehension of how coaches view the usage of PA as a result. Coaches need to be mindful of the unequal power that can arise between them and the athlete when utilizing PA, according to Middlemas and Harwood (2017, 2020). The incorporation and use of PA by association football coaches can facilitate the successful delivery of feedback, improving and strengthening players' game understanding and decision-making if coaches are aware of these psychological variables (Raya- Castellano et al., 2020; Wright et al., 2013).

Although PA's advantages and use in association football are widely acknowledged, coaches have identified a number of difficulties (Barker-Ruchti et al., 2021; Groom et al., 2011; Middlemas & Harwood, 2017; Wright et al., 2012). One of the most frequent issues raised by

coaches is the lack of time to gather and analyze the necessary data to provide players with feedback (Barker-Ruchti et al., 2021; Wright et al., 2012). Association football coaches were reported to typically finish their formal analysis of each game (91%) and frequently spend three to five hours gathering their knowledge (Wright et al., 2012). To gather, analyze, and interpret past performances, professional football teams have hired specialized performance analysts. This has freed up coaches' time to evaluate the players' performances.

The growing growth of PA in association football and throughout the world has brought attention to the need for more research into how coaches in various nations view and use PA to support their coaching practices. To illustrate the difficulties and issues with employing PA in Swedish association football, Barker-Ruchti et al. (2021) focused on their own experiences as researchers and practitioners. While recognizing the advantages PA can offer coaches, they emphasize the need for expanding coach and sport management education in order to comprehend how to adopt and use PA successfully. Their argument in support of further research into how PA is applied internationally is in line with that of Martin et al. (2018), Painczyk et al. (2017), and Wright (2015).

2.9 Document analysis

The systematic assessment and evaluation of documents, including printed and electronic (computer-based and Internet-transmitted) content, is known as document analysis. Document analysis requires data to be reviewed and interpreted to elicit meaning, gain insight, and provide empirical knowledge, just like other analytical methods in qualitative research Corbin & Strauss, (2008); see also Rapley, (2007). Documents contain text (words) and images that have been recorded without a researcher's intervention. For the purposes of this discussion, other mute or trace evidence, such as cultural artifacts, is not included. Atkinson and Coffey (1997) refer to documents as 'social facts, which are produced, shared, and used in socially organized ways.

Many different types of documents can be utilized for systematic evaluation as part of a study. Advertisements, meeting agendas, attendance sheets, and minutes, manuals, background papers, books, brochures, diaries, and journals, printed event programs, letters, memos, maps, and charts, newspaper clippings and articles, press releases, program proposals, application forms, and summaries, scripts for radio and television shows, organizational or institutional reports, survey

information, and various public records are among them. Scrapbooks and photo albums can also provide historical information for the study. Libraries, newspaper archives, historical society offices, and organizational or institutional files all have these kinds of records.

As part of their studies, researchers frequently analyze earlier literature and include that material in their publications. Where examined documents are listed, they frequently omit earlier research, though. Previous research is undoubtedly a source of data, necessitating that the analyst relies on the description and interpretation of data rather than using the raw data as a starting point (Bowe, 2009).

CHAPTER THREE

RESEARCH METHODS

3.1. Description of the Study Area

This study was conducted in Ethiopia especially the 2015 season of the Ethiopian Bet King premier league competition that was hosted in a different part of the country from October 11 to June. The competition was accommodated in different rounds: the first five-week matches were organized by Bahir Dar: Dire Dewa presented the following five-week matches, and finally, Hawassa and Adama hosted the rest of the tournament rounds. It was also conducted on matches of the 16 Ethiopian premier league clubs includes; Ethiopian Insurance, St. George, Bahir Dar Kenema, Hdiya Hosana, Welayita Dicha, Hawassa, Dire Dewa, Ethiopia Bunna, Wolkite Ketema, Fasil Ketema, Defence Force, Adama City, Arba Menche, Sidama Bunna, Ethio-electric, and legetafo legedadi.



3.1.1 Image of club participants from Wikipedia

3.2. Research Approach

Because of the research objectives and the character of the study variables, the study applied quantitative research approaches.

3.3. Research Design

The researcher utilized a Correlational research design. The correlational design will use to explain the link (correlation) between the dependent and independent variables (Cresswell, 2012).

3.4. Population, Sample Size, and Sampling Techniques

The study population of this research was the Ethiopian Bet King premier league teams that participated in the 2015 season competition. The researcher took 33.3% (40 games) from 41.6 % (50) games of the first-season statistics using the purposive sampling Technique. This is because within a game more than one formation might be applied and that couldn't be considered in the study, red cards, fluidity of formation following a goal scored, conceding during the match, manageability of data and time restriction were the major factors that were considered.

3.5. Source of Data

This research used only the secondary sources that were recorded in the data center of the super sport live stream game analysis. The total number of games in the first season was 120 which were scheduled through mid-way of the year. As a result, the researcher used about 40 games of match statistics.

3.6. Reliability of Data Source

Data used in the study was available by Ethiopian bet king premier league Share Company. The detailed information collected, processed, and outputted was delivered by super sport. Furthermore, 10 of 50 matches were expelled due to red cards, fluidity of formation following a goal scored, conceding during the match, redundancy of a single team, and irrelevant formations avoided.

3.7. Data Collection Instruments

The researcher collected the required data from secondary sources, this numerical data of 40 match analyses of premier league teams were collected through observation and document analysis.

3.8. Study Variables

The research was focused on correlating tactical formation with technical tactical performance parameters and match outcome: association between technical tactical performance parameters and match outcome and how the formation and technical tactical performance parameters predict match outcome. Conceptually the correlation is presented as follows

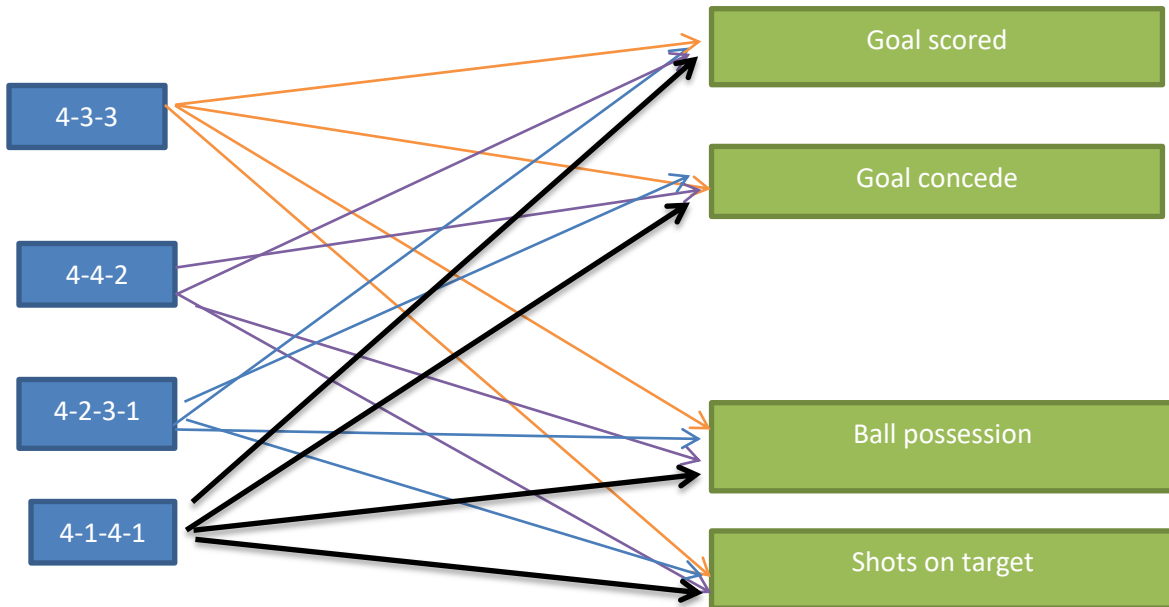


Figure 3.8.1 The association between Tactical Formation and tech-tactical performance parameters

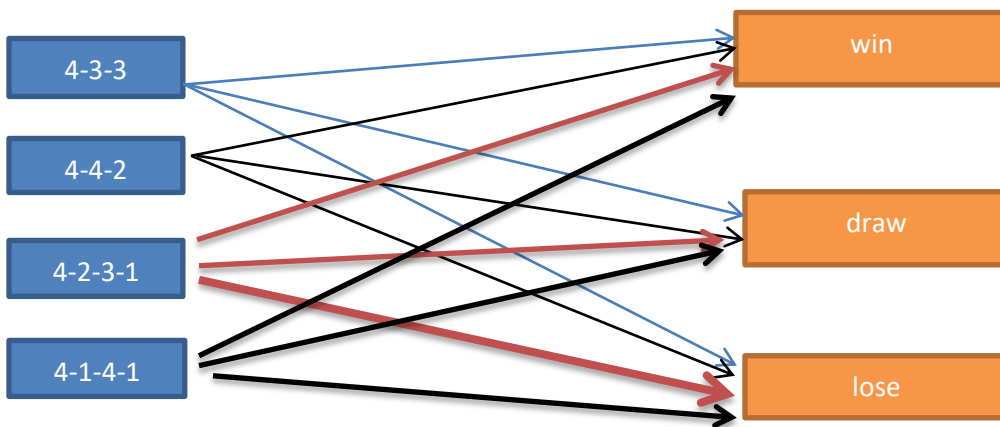


Figure 3.8.2 The relationship between Tactical Formation and match outcomes

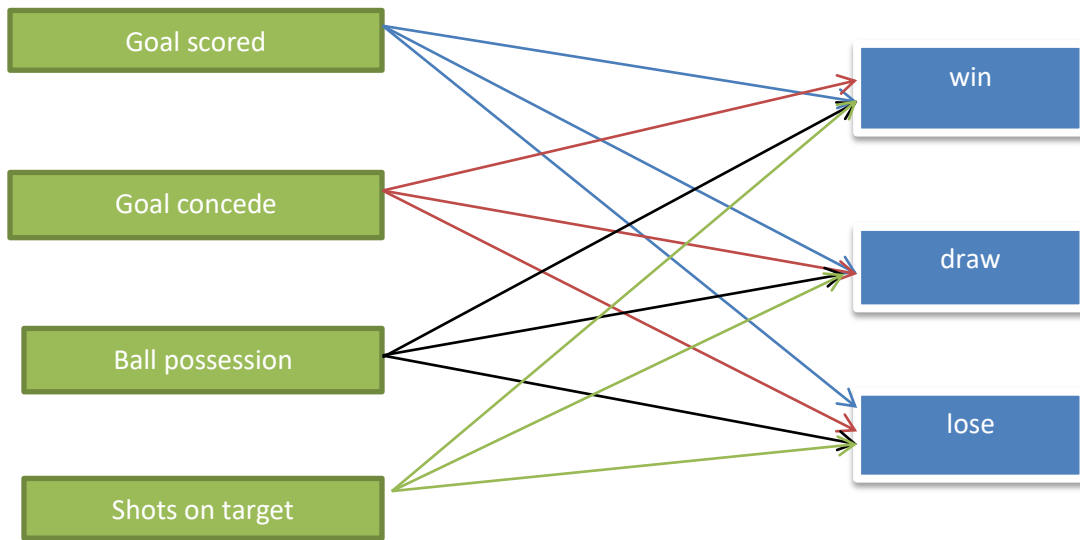


Figure 3.8.3 The link between Tech-tactical performance parameters and match outcomes

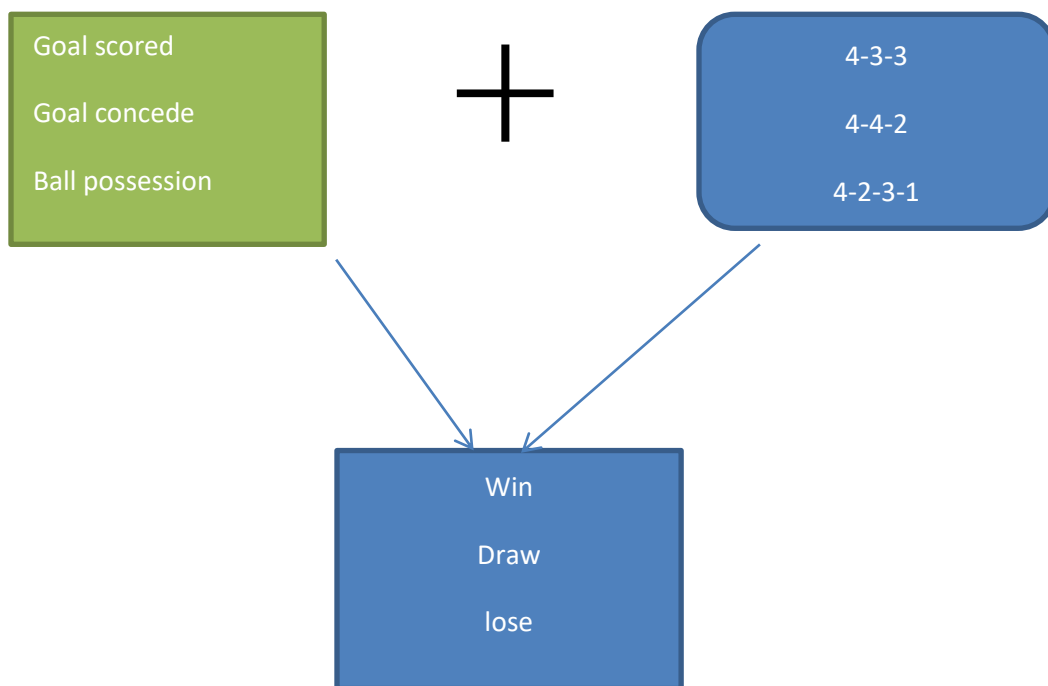


Figure 3.8.4 How Tactical Formation, tech-tactical performance parameters predict match outcome.

3.9. Data Collection Procedure

The data collection procedure for this study was sorted out from the database center of the Ethiopian premier league bet King Share Company that lived on air through super sport. After it lived, all the full videos were avail and remain in their link address on YouTube. The researcher utilized the lived and reviewed recorded videos to collect all the data. Eventually, all the necessary documents are converted through a hard disk drive. Once the data was converted, the researcher devoted substantial time to cleaning, recording, re-write, and sorting out the necessary elements of variables from the list of match statistics after the completion of every game and preparing for use. Meanwhile, the researcher used the organized data for further processing.

3.10 Method of Data Analysis

For the research, a quantitative kind of analysis was used. For this, Statistical Package for Social Science (SPSS) version 23 was employed. To test the expected relationship between the independent and dependent variables Pearson's product correlation and one-way ANOVA were applied aimed at the specific objectives and for the last objective of this study; the researcher used a multiple linear regression model due to the unique character of the objective which determines how tactical formation and technical tactical performance parameters predict match outcomes.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Results and Discussion

This chapter includes the result section of the data and its interpretation in all objectives and groups onto tactical formation with technical tactical performance parameters, tactical formation with match outcome, technical tactical performance parameters with match outcome, and how the formation and technical tactical performance parameters predict match outcome. For the following tables Statistical tests were significant if $p < .05$.

Table 1; Frequency Description Table of Tactical Formation

formation of the game			Frequency	Percent	Valid Percent	Cumulative Percent
4 4 2	Valid	Draw	2	25.0	25.0	25.0
		Loss	3	37.5	37.5	62.5
		Win	3	37.5	37.5	100.0
		Total	8	100.0	100.0	
4 3 3	Valid	Draw	17	33.3	33.3	33.3
		Loss	16	31.4	31.4	64.7
		Win	18	35.3	35.3	100.0
		Total	51	100.0	100.0	
4 2 3 1	Valid	Draw	2	15.4	15.4	15.4
		Loss	8	61.5	61.5	76.9
		Win	3	23.1	23.1	100.0
		Total	13	100.0	100.0	
4 1 4 1	Valid	Draw	3	37.5	37.5	37.5
		Loss	2	25.0	25.0	62.5
		Win	3	37.5	37.5	100.0
		Total	8	100.0	100.0	

According to the aforementioned frequency distribution tables and statistics, in 33.3% of the first season of the league matches coaches used 8 of 4-4-2, 51 of 4-3-3, 13 of 4-2-3-1 and 8 of 4-1-4-1 formation, in percentile 10, 63.3, 16.3 and 10% were used respectively.

Before the game, a coach is expected to assume responsibility for choosing and using alternative formations while taking into account a variety of factors and the abilities of the players on hand. The charts above also demonstrate that most coaches favored using the 4-3-3 formation in the league competition. But the statistics and Getty results described that from 8 of the 4-4-2, there are 3 wins, 2 draws, and 3 losses appeared, from 51 of the 4-3-3 formation there were 18 wins, 17 draws, and 16 loses recorded, from 13 of 4-2-3-1 formation there are 3 wins, 2 draws and 8 lose resulted and from 8 of 4-1-4-1 formation there are 3 wins, 3 draws and 2 loses were shown.

Table 2

The relationship of tactical formation and technical, tactical performance parameters

Variable		fromation_coded	Possession	Goal scored	Goal conceded	Shots_on_target
1. fromation_coded	Pearson's r	—				
	p-value	—				
2. Possession	Pearson's r	-0.001	—			
	p-value	0.996	—			
3. Goal scored	Pearson's r	-0.108	0.186	—		
	p-value	0.340	0.099	—		
4. Goal conceded	Pearson's r	-0.022	-0.203	0.057	—	
	p-value	0.848	0.070	0.617	—	
5. Shots_on_target	Pearson's r	-0.027	0.320	0.664	-0.034	—
	p-value	0.815	0.004	< .001	0.765	—

Based on the result of the study tactical formation has not significantly correlated with possession($r = -0.001$, $p = .996$), goal scored ($r = -.108$, $p = .340$), goal conceded ($r = -.022$, $p = .848$) and shots on target($r = -.027$, $p = .815$).

ANOVA table for performance parameter over formation status

ANOVA - Possession

Cases	Sum of Squares	df	Mean Square	F	p
formation_coded	425.008	3	141.669	3.018	0.035
Residuals	3566.979	76	46.934		

Note. Type III Sum of Squares

Post Hoc Comparisons - formation_coded

		Mean Difference	SE	t	P _{Tukey}
4 4 2	4 3 3	-6.914	2.605	-2.654	0.047
	4 2 3 1	-3.106	3.078	-1.009	0.745
	4 1 4 1	-4.500	3.425	-1.314	0.557
4 3 3	4 2 3 1	3.808	2.129	1.789	0.286
	4 1 4 1	2.414	2.605	0.927	0.791
4 2 3 1	4 1 4 1	-1.394	3.078	-0.453	0.969

Even though, the correlation table determined that there was no significant relationship between tactical formation and performance parameters, the ANOVA and Post Hoc comparison table shows that there was a significant difference in possession over those of tactical formations. According to the data, a team that plays in a 4-3-3 formation is the most suitable for ball Possession compared to others with a mean difference of 6.914 over 4-4-2, 3.808 over 4-2-3-1, and 2.414 over 4-1-4-1. In addition, the 4-1-4-1 formation has better possession than 4-2-3-1 and 4-4-2 with a mean difference of 1.394 and 4.5 respectively. Furthermore, there have been shown that there is another optional dominance of the 4-2-3-1 over the 4-4-2 formation with a mean difference of 3.106. Finally, the 4-4-2 is the least preferred formation for those teams that want to have better dominance over ball possession and it's also crucial to consider that the 4-4-2 formation by its nature and tactical strategy is more defensive than the other.

ANOVA - Goal scored

Cases	Sum of Squares	df	Mean Square	F	p
fromation_coded	5.940	3	1.980	1.253	0.296
Residuals	120.048	76	1.580		

Note. Type III Sum of Squares

The accompanying table demonstrates that there is no appreciable variation in goal-scoring rate across formations.

ANOVA - Goal conceded

Cases	Sum of Squares	df	Mean Square	F	p
fromation_coded	6.759	3	2.253	1.557	0.207
Residuals	109.991	76	1.447		

Note. Type III Sum of Squares

There is no difference in the goal-conceding rate between tactical formations, according to the ANOVA table results.

ANOVA - Shots_on_target

Cases	Sum of Squares	df	Mean Square	F	p
fromation_coded	16.690	3	5.563	2.369	0.077
Residuals	178.497	76	2.349		

As the table indicated there isn't also resulted in a significant difference rate of shots on target over formations.

Table 3; *The association between tactical formation and match outcome*

Variable		fromation_coded	Match Outcome
1. fromation_coded	Pearson's r	—	
	p-value	—	
2. Match Outcome	Pearson's r	-0.025	—
	p-value	0.827	—

There is no significant correlation between tactical formation over match outcome with $r = -.025$, and $p = .827$.

Table 4*The relationship between technical tactical performance parameters and match outcome*

Variable		Match Outcome	Possession	Goal scored	Goal conceded	Shots_on_target
1. Match Outcome	Pearson's r	—				
	p-value	—				
2. Possession	Pearson's r	0.153	—			
	p-value	0.175	—			
3. Goal scored	Pearson's r	0.540	0.186	—		
	p-value	< .001	0.099	—		
4. Goal conceded	Pearson's r	-0.234	-0.203	0.057	—	
	p-value	0.037	0.070	0.617	—	
5. Shots_on_target	Pearson's r	0.356	0.320	0.664	-0.034	—
	p-value	0.001	0.004	< .001	0.765	—

As indicated in Table 4 ball possession has no significant correlation with match outcome ($r = .153$, $p = .175$). The variables goal scored ($r = .540$, $p = <.001$) and shots on target ($r = .356$, $p = .001$) are shown a positive and moderate correlation with match outcome. Exceptionally, as the correlation coefficient and level of significance indicated goal conceded has a negative and weak correlation ($r = -.234$, $p = .037$).

Based on the result of the study Match possession has no association with goals scored and goals conceded. It rather shows a positive and significantly moderate correlation with shots on target ($r = .320$, $p = .004$).

Goal scored has a strong and positive correlation with shots on target ($r = .664$, $p = .000$), but it has not significantly correlated with the goal conceded. Furthermore, as the number says there is no significant association between goal conceded and shots on target.

ANOVA - Possession

Cases	Sum of Squares	df	Mean Square	F	p
Match Outcome	102.718	2	51.359	1.017	0.367
Residuals	3889.270	77	50.510		

Note. Type III Sum of Squares

According to the aforementioned ANOVA chart, there is no discernible difference in possession between winning, drawing and losing teams.

ANOVA - Goal scored

Cases	Sum of Squares	df	Mean Square	F	p
Match Outcome	48.379	2	24.189	24.000	< .001
Residuals	77.609	77	1.008		

Note. Type III Sum of Squares

ANOVA - Goal conceded

Cases	Sum of Squares	df	Mean Square	F	p
Match Outcome	33.710	2	16.855	15.629	< .001
Residuals	83.040	77	1.078		

Note. Type III Sum of Squares

ANOVA - Shots_on_target

Cases	Sum of Squares	df	Mean Square	F	p
Match Outcome	24.974	2	12.487	5.649	0.005
Residuals	170.214	77	2.211		

Note. Type III Sum of Squares

According to the ANOVA score, there is a substantial difference between winning, tying, and losing teams in terms of goals scored, goals conceded, and shots on target.

Table 5

Multiple linear regression analysis of match outcome

Model		Coefficients ^a				Collinearity Statistics		
		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Tolerance	VIF
		B	Std. Error	Beta				
1	(Constant)	1.041	.925		1.125	.264		
	formation of the game	.051	.149	.032	.339	.735	.985	1.016
	match possession	.001	.017	.004	.040	.968	.860	1.163
	Goal Scored	.575	.123	.587	4.671	.000	.544	1.837
	Goal conceded	-.272	.097	-.267	-2.803	.006	.948	1.055
	Shots on target	-.034	.102	-.044	-.338	.736	.516	1.939

Formation of the game, match possession, and shots on target do not imply the winning, drawing, and losing status of the game. As the independent variables, the goal scored, and a goal conceded has a p-value of less than 5% : then to conclude, these variables are significant factors and predict the match outcome for the Ethiopian Premier League (Table: 5). This is written in the following equation.

$$\text{Match outcome} = \beta (\text{constant}) + \beta (\text{goal scored}) + \beta (\text{goal conceded})$$

$$\text{Match outcome} = 1.041 + .575 \text{ goal scored} + -.272 \text{ goal conceded}$$

Interpretation of regression coefficients

Coefficients indicated how much the match outcome variable varies with goal-scored and goal-conceded variables when all other independent variables are held constant. The beta coefficients indicated how and to what extent the goal scored and a goal conceded influenced the match outcome variable.

Goal scored and conceded affected the match outcome the rate of the goal score increased by one unit the match outcome status of the team was increased by .575 when the other factor in the model was considered constant and When the goal conceded increased by one unit the winning status of the team was decreased by .272 when the other factor in the model becomes constant.

CHAPTER FIVE

DISCUSSION AND IMPLICATION

5.1. Discussion

The purpose of this study was to gain a better understanding of tactical formation, technical-tactical proficiency, match outcome, and interrelation. Quantitative analysis of game activities is a critical step in observing their team players' and opponents' teams' performance with an objective-based measurement and can be useful in identifying priority training areas for the team.

Soccer is a complicated sport, in which success depends on several physical, technical, and tactical factors (Min, 2016). In soccer, the ultimate goal that teams strive for best is to score goals and not concede goals (Kempe et al., 2014). Soccer like other team sports is considered a casually intermittent activity involving sudden variations in directional modes that parallel game-related changes in intensity (Min,2016). One of the popular research subjects in the scientific world in recent years has been figuring out the success criterion for football teams (Parim et al., 2021). Clarifying the strategic performance objectives of teams and examining the indicators that enhance their competitive outcomes are two of sports science's key objectives. (McGarry, 2009; Rizvandi et al., 2019). In this context, statistical analysis of team performance will provide soccer players and coaches with the opportunity to re-evaluate their performance (Kubayi & Toriola, 2020a; Liebermann et al., 2002).

In the past decade, some authors tried to identify a winning profile, and some compared tactical formations, all of those studies were restricted to observing and comparing single factors across winning, drawing, and losing teams but emphasizing and interrelating some other technical-tactical factors like possession, shots on target, goal scored and conceded also vital. Techniques and tactics are the most decisive components regarding indicators of a better result and it's also an instrument for coaches and players like a businessman with lots of money who wants to buy precious goods. Even though physical and psychological components are not discovered in the study, technical and tactical issues are well treated and analyzed in terms of tactical formation, technical-tactical elements, and match outcomes with their respective elements. The discussion

part has also subdivisions based on the study objectives. This part of the thesis also considers how these aforementioned variables relate to each other.

This study accredited more emphasis on the potential effects of tactical formations against different metrics. According to the data analyzed, there is no significant correlation between tactical formation (4-4-2, 4-3-3, 4-2-3-1, and 4-1-4-1) and technical-tactical performance parameters (possession, goal scored, goal concede, and shots on target) has been shown. This implies that the configuration that the premier league coaches used has no purpose on performance metrics beyond being formations, but it's obvious that there has been a difference between these formations. Even though there is no clear finding that is in line with the result, the finding was treated in previous research and stated that Up until now, few studies have investigated the influence of team formations in full-sized 11 vs. 11 respectively large-sided (LSG) soccer matches with elite players. Consequently, the role which team formations play concerning game performance is unclear at present (Memmert et al., 2019).

According to ANOVA, ball possession varies significantly between formations. The Ethiopian Premier League clubs that used the 4-3-3 formation have a higher percentage of ball possession than the other teams. As the statistical description mentions that the majority of the clubs play in a 4-3-3 formation, which suggests that they all seek to control the ball against their opponents. The 2013 Ethiopian national team served as a fantastic model and inspiration for the league teams. For clubs who desire to press and play offensively, the 4-3-3 formation is chosen, however, the statistical data shows that there were many goalless matches, tight results, and closed match outcomes recorded, this implies the formation doesn't function well in leagues like Ethiopian. This is due to the appropriateness of the application of the formation raised questions and there might be hesitation over their tactics and playing style as The playing formation of a football team is critical for implementing the specific tactics and style of play that the coach wants to achieve (McLean et al., 2018). Secondly, the 4-2-3-1 system is the second-best option for maintaining ball possession ahead of the 4-1-4-1; while the 4-4-2 more defensive shape is the least effective. This indicates that coaches preferred ball possession as the major performance indicator over the other, like other African coaches which is a compatible finding forwarded by (Kubayi & Toriola, 2020), that described possession as a key performance indicator in African soccer in domestic competitions.

One interesting outcome was that differences between formations increase when comparing formations with three vs. four center backs in the defending row. Some studies only compared two formations with a back-3 and a back-4, and the differences were more pronounced compared to formations that were similar in the number of defenders, midfielders, and forwards (Forcher et al., 2022).

According to Pearson's product correlation, the tactical formation has shown an insignificant correlation over match outcome and insignificant mean difference along with formations. This means that the tactical formations that are applied during the game do not affect the winning, drawing, and losing status of the game. Even if not flawlessly described, the studied variables treated and discussed as playing formations and their influence on match performance and match outcome is generally accepted as one of the most discussed and debated topics in football (McLean et al., 2018). This might be the result of being regardless of football demand as (Paraskevas et al., 2020) stated, In modern soccer, playing position is a determining factor regarding the physical demands placed on the player. Although several previous studies have quantified positional demands, the potential effect of playing formation on positional demands has received little attention. This has also another implication that football nature as formation doesn't show correlation and insignificant mean difference over winning, drawing, and losing status which has a great deal with (Silva et al., 2016) ideas which determine soccer games, in particular, can be considered as a complex, self-organized, unstable, unpredictable, and highly dynamic system in which players from competing teams try to keep the stability of their attacking, organizing, and defending balance and to destabilize the balance of the opposition.

Technical tactical consideration in soccer has become interesting in the current data-driven society. This finding also figured out the correlation among match outcomes. As a result, the data-driven shows there is a significant correlation between technical-tactical performance parameters with match outcome, except ball possession results. In the situations of the Ethiopian Premier League, parallel findings on the significance of shots on target over match outcomes have been discovered, even though some research has produced contentious conclusions. As Asaye, 2022, and (Moura et al., 2013) mention in their study, the on-target shot is a parameter that discriminates between winning and losing the status of the game. In similar studies, shots on target were associated with winning soccer matches (Liu et al., 2015). The same study mentions

that Winning teams had more shots and shots on target than losing and drawing teams (Kubayi & Toriola, 2020).

Ball possession didn't show a significant difference or correlation among match outcomes. (Kubayi & Toriola, 2020) reported that the losing teams had higher ball possession than the winning teams in the South African Premier Soccer League. For African matches, ball possession does not define successful team performance. On the contrary, (Bradley et al., 2014) also found that dominant teams in European competitions have adopted a possession style of play, suggesting that they prefer to "control" the game by dictating the play, but if a team is unable to retain the ball possession, a "direct" style of play might be a more appropriate game tactic. This direct style quickly takes the ball into shooting positions, thereby possibly creating more goal-scoring opportunities (Kite & Nevill, 2017). Another study that found a poor relationship between ball possession and success was the work of Gama et al. (2016) discovered that in the Portuguese Premier League of 2010/2011, the amount of ball possession did not correlate with match outcomes.

Goal scored and goals conceded have shown a positive association with match outcome. (Yue et al., 2014) identified efficiency as the most influential variable in the German Bundesliga. However, Schauburger et al. (2017) showed that (running) distance is the most important variable. From their analysis the goal scored and conceded indirectly stated as if controlled for home advantage and quality of opponent, defensive errors, shots from counterattacks, goal efficiency, clearances, shots on target, Shots from inside the penalty area, crosses, total market value starting formation and total shots are significant predictors for success from a home team perspective.

From the linear regression table, we can easily understand that formation, match possession, and shots on target don't predict match outcomes. Even if it's unknown that formation affects match outcomes, as (Lepschy et al., 2020), showed for both home and away teams total market value on starting formations is a significant predictor for success or winning and, there is still a controversial idea discussed over possession since it is and not the indicator for both the winning and losing status of the game. As Lots of studies share that, when observing two teams of different skill levels, the weaker ones perform more passes and less dribbling Possession and

passing success (Castellano et al., 2012), passing (Moura et al., 2013) are the common parameters that distinguish winning and losing teams and In the study of (Castellano et al., 2012), analyzed the World Cups of 2002, 2006, and 2010, the authors found that ball possession was not a discriminating variable between successful and unsuccessful teams when the three competitions were analyzed altogether.

Besides possession, the other controversial result occurred as shots on target have a significant correlation but are insignificant to predicting match outcome. These results are in agreement with those of (Liu et al., 2015), who found that winners at the 2014 FIFA WC showed that shots on target increased the chance of victory by 48%. In addition, a previous study found similar results, suggesting that shots on target are crucial to winning in 2002, 2006, and 2010 FIFA WC competitions (Castellano et al., 2012). This is an implication for the premier league teams that lacks quality, quantity, opportunity, and tight winnings on the score are the major factor which is mainly related to shots on target.

The rate of goal scoring and goal conceding are the major predictors of match outcome. It's obvious that the winning team is discriminated by the goal which is scored and the losing team always concedes more goals than the winners. As a result, there is no reason that goal scored and concede not to be a predictor of match outcome. Goal scored and conceded are inseparable like two sides of a coin that significantly predict and affect match outcomes. Even if there are no sufficient studies found, there was a close description forwarded by (Lepschy et al., 2020), which stated that For both home and away teams, goal efficiency, and clearances had a significant influence and predictors of winning.

5.2. PRACTICAL IMPLICATION

Based on the research objectives formation has insignificant correlation with both technical-tactical metrics and match outcomes, however, most of the Ethiopian premier league coaches used the 4-3-3. This formation is the most pertinent formation among the European giants. By its nature the 4-3-3 is more offensive, more goals scored, greater distances, increased maximal and mean running speed, and high frequency of high-intensity activities are the common characteristics of the formation, but as the study finding shows that tight results over match outcomes, goalless matches, tight attempt and lack of offensive nature appeared. This implies that there might be a knowledge gap in understanding the principle, tactical application, and playing style of formation

over the coaches beyond using it for dominating ball possession. So, all the premier league coaches, players, and coaching staff need to focus on the predetermined principle, tactics, and playing styles of the formation is a better application in both training and the real match situation.

Shots on target, goals scored and goals conceded are the major performance indicators for winning matches. Coaches and trainers should have to bear in mind that these are the major elements to win the league matches; As a result, it's better to stick with these performance indicators while conducting the training sessions.

Furthermore, the goal scored and a goal conceded is found to be the best predictors of match outcomes, but shots on target are not. This finding is a headache for the premier coaches and players since the goal scored is the result of shots on target, and many authors and researchers found that shots on target are the major predictors of match outcomes. This implies that coaches and players need to concentrate on the quality and quantity of shots and have to determine other predictors of match outcomes and practice in the training.

CHAPTER SIX

SUMMARY, CONCLUSION, AND RECOMMENDATION

6.1 summary

The main purpose of this study was to examine the relationship between tactical formation, technical-tactical performance parameters, and match outcomes among Ethiopian premier league teams. In order to assess this correlation, the researcher looked over the existing literature to determine the methodology and study focus towards accomplishing this goal.

The research question was developed based on the aforementioned precise aims. 16 teams participated in the league competition, Even if teams made an equal number of games per week, for different reasons the intervention of each team was not equal. Through the document analyzed each team match included a maximum of 6 and a minimum of 2 times were taking part as a subject. This is due to the inclusion and exclusion criteria that appeared and impacted matches like red cards, application of formations, fluidity of formations, severe injury during the game, checking the playing style either more defensive or offensive after scoring and conceding a goal are prominently determined through the process. Once the data were gathered, it goes through organizing, rewriting, and ready for use, then to figure the quantitative correlation of the variables analyzed through SPSS version 23. Even though while analyzing the data the researcher used Pearson correlation product and multiple linear regressions, it has been found that it's worthwhile to use one-way ANOVA to see the effect size of each variable. Finally, the study exposed that there has been significant and insignificant result appeared between tactical formation, technical-tactical performance parameters, and match outcome. Through Pearson correlation, linear regression, and one-way ANOVA the data was analyzed. Hence, the following major findings were examined.

1. As the tests result indicated that there was an insignificant correlation has been shown between tactical formation and technical-tactical performance parameters. Even though ANOVA indicated there is still a significant mean difference between formations over possession, it doesn't work out among goal scored, goal conceded, and shots on target.

2. The findings of this study revealed that there is no relation between tactical formation and match outcome. From the ANOVA record, there is still no mean difference that has been scored between variables.
3. The research demonstrated that the outcome of a game had no discernible relationship with ball possession. Goals scored and shots on target have a moderately positive association with match results. Exceptionally, the association between the goal conceded and the level of importance showed a negative and weak correlation. The same mean difference has resulted from ANOVA.
4. The goal scored and a goal conceded affect and predict the match outcomes positively and negatively by the rate at which the goal score increased by one unit the match outcome status of the team was increased by .575 and When the goal conceded increased by one unit the winning status of the team was decreased by .272

6.2. Conclusion

To conclude the research findings,

- tactical formations were neither correlated with technical tactical performance parameters nor match outcomes, it rather differ in ball possession.
- Another important conclusion from the results of this study is that goal scored, goal conceded and shots on goal are the major indicator of match outcomes.
- The goal scored and the goal conceded, which serve as the independent variables, are important variables and predictors of match results in the Ethiopian bet king premier league.
- Lastly, to be successful in soccer matches efficiency is the most important issue than just scoring higher numbers in game-related technical-tactical actions.

6.3 Recommendation

As Technical-tactical elements are vibrant for soccer, The researcher forwards Theoretical and practical recommendations to stakeholders.

For Instructors

- Instructors should identify the key performance indicators and train coaches in every detail of formations with their respective nature, principles, tactics, and playing styles based on considering the level, style of play, and cultural differences of soccer.

For Coaches

- Coaches would give more emphasis on KPIs like shots on target, goals scored and a goal conceded, in addition, they need to focus on shots on target to boost the goal-scoring efficiency while practicing. Furthermore, they have to understand and work on the precise application of formations and tactics

For players

- Exceptionally players ought to comprehend every piece of tactical components and should be committed since they give lives to those formations and technical tactical elements and bring them to the ground and should practice it for better improvements.

Game analysts

- The analyst has to collect and identify all the necessary data about the advanced formation, key performance indicators, and the rate at which these performance indicators affect the match and analyze for coaches and players in favor of the team

Finally, the researcher believes that including individuals' qualities and looking at other important performance indicators would make this study more intriguing.

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Appendix 1

Document analysis guidelines

The study used the data that was analyzed and documented through the processes. As a result, the data to be used was prepared for data entry by using the following document analysis guidelines.

	Stats	
	Teams	
	Total possession	
	Shots on target	
	Match outcome	
	Total goal scored	
	Total goal concede	

Appendix 2

Observation Checklist

This is the checklist that was prepared for ensuring and following every game video to manipulate and reduce suspicion of some sort of extraneous variable for this research.

Formation

Team

Item	yes	no
Does Coaches apply the same formation as on the paper?		
Does Coaches use different formations within a single match after goal scoring?		
Does Coaches use different formations within a single match after goal conceding		
Does Teams playing defensively without losing their pattern or shapes? <ul style="list-style-type: none"> • Prioritize safety and clean sheets • Focus on avoiding a risk 		
Does Teams playing offensively without losing their pattern or shapes? <ul style="list-style-type: none"> • Courage to possess the ball from the defensive third • Taking risks during penetration and pressing high 		
Does Weather favor teams?		
Does Injuries affect while proceeding the game ?		

APPENDIX-3

Sample raw data are directly taken from super sport live stream



APPENDIX -4

PERFORMANCE PARAMETERS

Possession

Goal Scored

Goal Conced

Shots On Target

APPENDIX -5

MATCH OUTCOME

Win

Draw

Lose

APPENDIX -6

TACTICAL FORMATION

4-4-2

4-3-3

4-2-3-1

4-1-4-1