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DEPARTMENT OF SPORTS SCIENCE

Using Sports Data Analytics To Enhance The Performance Of The Zimbabwe Premier Soccer League (ZPSL) Teams In Zimbabwe.

OLIVER CHOKHOTHO

B212273B

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ABSTRACT

The purpose of the study was to come up with intervention measures for using Data Analytics by football clubs affiliated with the Zimbabwe Premier Soccer League. The study employed the concurrent mixed methods of research design. Data was collected from Zimbabwe Premier Soccer League team technical persons and owners of football clubs using questionnaires and interviews. The Statistical Package for Social Science (SPSS) version 21 was used to perform descriptive statistical and parametric tests of quantitative data and NVivo version 12 software for Windows was used to organise qualitative data into themes. The data was graphically presented by means of tables and charts. The findings showed that most football clubs affiliated with the Zimbabwe Premier Soccer League do not use data analytics strategies in their sport training and competitions. The study established the lack of use of data analytics in the football clubs, reduced sports training and coaching science knowledge and the current national economic downturn as the major challenges why football clubs in The Premier League were lagging behind football technology. The study recommended that football clubs affiliated with the Zimbabwe Premier Soccer League must embrace data analytics to improve performance.

DEDICATION

This research was devoted to my wife Janet Chokhotho and my friend Chrimson Chibhamu who supported and motivated me on the importance of commitment and hard working to achieve academic goals.

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May God bless you all.

STATEMENT OF PERMISSION TO USE

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CHAPTER ONE

THE PROBLEM AND ITS SETTING

1.1 Introduction

Successful football clubs the world over rely on the use of data analytics which is the cornerstone for sound decision-making when rating the performance of players and a team's performance. Recent studies have proven that the entire world's best football clubs notably; Real Madrid Football Club of Spain, Arsenal Football Club of England, and Bayer Leverkusen Football Club of Italy among others, do extensively use data analytics to produce world-class performance standards, Najjar (2023). Football clubs in Zimbabwe are yet to embrace the use of digital technology thus their performance and that of their opponents cannot be rated due to the absence of statistical data recording and analysis. This chapter highlighted the Background of the study, Statement of the problem, Research questions, Objectives of the study, Significance of the study, Assumptions, Delimitations and limitations of the study.

1.2 Background to the study

There are various factors that contribute to the good performance of footballers in world of football particularly in the Zimbabwe Premier Soccer League. These factors include; analytics for injury management, talent identification, scouting, tactical decision-making, technical performance evaluation and fitness assessment tools. As a result optimum performance in football can be achieved through the adoption of one or more of the mentioned factors Baker et al. (2017). Football coaches or Managers in the Zimbabwe Premier Soccer League must effectively combine these data analytics tools for their players and teams to attain peak performance levels.

The use of Sports Data Analytics is a very reliable way in enhancing the performance of football teams in Zimbabwe's elite league. Modern day researchers in sports do concur that superior performance in football is gained when a team makes use of Sports Data Analytics (David and Trewartha, 2019). The beginning of the 20th century has witnessed a shear development in achieving optimal performance in the game of football. Therefore, data analytic methods have gained a lot of consciousness among top football clubs world-wide.

In Zimbabwe, there have not been researches pertaining to the use of sports data analytics in football. The lack of research on sports data analytics in the Zimbabwe football league

suggests that this area is up until now to be investigated in Zimbabwe. There are no other methodical ways to enhance performance of football teams and players other that resorting to the use of sports data analytics.

A lot of research has been done on the use of sports data analytics to enhance performance in football in numerous countries around the world. Conversely, no known research studies on the use of data analytics to enhance performance in football were done in Zimbabwe. One of the most significant obstacles confronting the enhancing of performance in Zimbabwe football is the absence of adequate scientific support within developmental structures (Sabeta, 2019). This research aims to depict vital information on enhancing performance using sports data analytics so as to assist coaches and players in optimizing performance.

The nation of Zimbabwe has not yet qualified for the FIFA World Cup since its inception and this was attributed to the lack of use of data analytic tools in enhancing the performance of the Zimbabwe Premier Soccer League teams, (Catapult, 2022). The use of sports data analytics can afford a more independent method for anticipating future success of football in Zimbabwe which will ultimately enhance the quality of the football in Zimbabwe.

1.3 Statement of the problem

Zimbabwe used to produce world-class footballers and competitive teams which used to make an impact in African club competitions and personalities in football domestically. There have been landmark achievers in Zimbabwe like Bruce Grobbelaar, Peter Ndlovu, Mosses Chunga, Benjamin Mwaruwaru and Norman Mapeza among others. There has not been any evidence of the use of sports data analytics in Zimbabwe, The Zimbabwe Herald (2015). Sports analytics has become progressively significant in the evolving and competitive world of sports. Analytics has been established as a transformative strength, shaping how games are prepared, athletes are organized, and teams evolve. Data analytics tools and technologies have introduced new dimensions in sports, offering understanding that was formerly unseen and unexplored.

The need to impart to the football teams on gaining problem-solving skills influenced the writer to carry out the study. Integrating football data analytics in the Zimbabwe Premier Soccer League teams would impart the ability to think analytically and approach problems in the right way in the professional field. Elite football teams in industrialised countries like

Germany and France use multifaceted analytics to evaluate football performance by using data signals, video footage, conjectured goals and assists, and match-player performance data.

Sports teams in the Zimbabwe Premier Soccer League can recognize regions for development, point out the best or floundering players, and handpick the topmost players for a specific playing style or game plan. In football, analytics tools are designed to capture and deduce player movements, actions on the field, and physical energies to inform coaching strategies and player development. Metrics such as player workload, movement proficiency, and game-specific physical profiles aid teams in heightening training, reducing injury risks, and improving player performance.

In Zimbabwe, sports data analytics can be used for return to play-protocols by helping players who are recovering from injuries to safely and effectively return to the game. Sports data analytics can also be used for load management by helping players handle the demands of a gruelling season and performance optimization where the coach will ensure that the players are always performing at their best. Tactical preparation and game planning would be another function of sports data analytics in Zimbabwe as well as real-time and post-game tactical analysis to optimize the offensive and defensive strategies.

These achievements were made before the adoption of digital technology and big data as football coaching tools. Before the embrace of digital technology and big data as coaching aids, remarkable achievements were attained in football. However, since the dawn of the new millennium, football teams across Europe, North America, South America, Asia, and other African nations have integrated big data and digital tools into their coaching methodologies. This integration has significantly elevated football performance and individual athlete development. Conversely, countries such as Zimbabwe, which have yet to embrace these advancements, have experienced stagnation in both football performance and athlete development.

1.4 Significance of the study

The research resulted in developing intervention methods that can be used by the Zimbabwe Premier Soccer League teams. The study's main objective was to assess the level of adoption of sports data analytics and come up with intervention strategies to persuade the use of sports data by coaches so that they may be able to effectively evaluate the performance of their

teams. The research also adds up to the existing knowledge pertaining to the use of sports data analytics since the study provides a foundation for other studies to follow. The research may also influence the formulation of policies that may be enforced and make it mandatory for all Zimbabwe Premier League teams to employ and use sports data Analysts. By carrying out the research, the researcher wishes to evaluate the efficiency of using data analytics in rating the teams' and individual performances in football for the Premier League teams playing in the Zimbabwean top-flight league. The study can be very useful to stakeholders such as The Ministry of Sports, Sports and Recreation Commission, Zimbabwe Football Association and all top-flight Football Clubs in the national premier league. The findings of this research can persuade football clubs to acquire new technologies necessary to boost the measurement of teams' and player performances. This study intends to provide answers on why the performance of football teams in Zimbabwe is lowly rated as compared to other football leagues in the region with whom they play international games. This can also go a long way in revealing the challenges facing the football teams in the Zimbabwe Premier Soccer League in local and international competitions. Subsequently, the study resolves to act as a foundation for further research.

1.5 RESEARCH QUESTIONS

1.5.1 Primary Research Question

How can data analytics be used to enhance the performance of the Zimbabwe Premier League football teams.

1.4.1 Subsidiary Research Questions

1. What are the current levels of application of data analytics as a performance enhancement tool by Premier League football Teams in Zimbabwe?
2. What factors have shaped the current levels of adoption of data analytics by Zimbabwean Premier League Football teams?
3. What measures can be adopted to increase the usage of data analytics by the Zimbabwe Premier Soccer League teams in Zimbabwe?

1.6 Research objectives

1.6.1 Purpose of the study

To find out how the use of data analytics can be used to enhance the performance of the Zimbabwe Premier Soccer League teams.

1.6.2 Specific Objectives

1. To determine the current levels of application of data analytics by Zimbabwean Premier Football League.
2. To identify the factors which have shaped the current levels of adoption of data analytics by Zimbabwe Premier Soccer League teams.
3. To measure the impact of the current levels of adoption of data analytics by Zimbabwean Premier Soccer League teams have on team performance?
4. To provide intervention actions on how data analytics can be used to enhance the performance of Zimbabwe Premier Soccer League teams.

1.7 Delimitation of study

The study was done in Zimbabwe largely concentrating on football teams affiliated with the Zimbabwe Premier Soccer League in the 2024 season. The study focussed on the use of data analytic methods by these football clubs.

1.8 Study Outline

Chapter 1 comprised of the problem and its settings then the background of the study was presented, statement of the major problem, research questions, significance of the study, delimitation and restrictions of the study and summary.

Chapter 2 revised the interrelated literature in the setting of the research area. Under this chapter, the researcher came up with theories connected to the study thus connecting the study to an existing theory and presenting how it narrates the topic.

Chapter 3 dwelled on the Methodology; the research design, population sample, instrumentation, data collection procedures, data analysis plan and summary.

Chapter 4 covered the data presentation, analysis of research findings and the research findings.

Chapter 5 covered the summary, conclusions and recommendations.

1.8 Summary

Sports entities should understand the principles of sports data analytics to develop models that help teams in rating performance and predicting injuries and the future performance of individuals. Football clubs in the Zimbabwe Premier League need to use this strategic technology tool to succeed in competitions against other rival teams and cut costs by correctly predicting performance and injury in football players.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter focused on the theoretical framework, and the related literature review of the topic of the study. Above all, the researcher focused on the use of data analytics in enhancing the performance of the football teams affiliated with the Zimbabwe Premier Soccer League (ZPSL). A systematic review and analysis of the available data analytic methods and studies done across the world were considered to develop a strong understanding of the advantages of using data on football analytics. The chapter ends with a summary.

2.2 Conceptual framework

Data Analytics is a process that converts raw data into actionable insights. It involves analysing data to make strategic decisions, optimizing performance, and making the most of profit. It can also be used to predict future trends, Athmaja et al. (2017). Though it may seem like a recent development, the seeds of data analytics in sports were planted long ago, as statisticians have been tracking data in the form of box scores and player stats since the 1800s.

The use of statistics in sports did not truly gain legitimacy, however, until the early 2000s. This was when the Oakland Athletics, an MLB team, decided to take an analytical approach to choosing players and developing talent, an initiative led by manager Billy Beane. Beane was influenced by the book Baseball Abstracts by Bill James, which introduced the concept of Sabermetrics, the empirical analysis of baseball, to a wider audience, Bean (2005). Bean and his team used statistical data analysis in the 2002 MLB season, resulting in a 20-game winning streak. In the Zimbabwe Premier Soccer League, initiatives are yet to be undertaken to introduce the concept of using data analytics as was done in the United States of America which did it twenty years ago, up to now the concept is unknown in Zimbabwe.

Tools used in data analysis include spreadsheet apps like Excel, data visualization tools, and encoding languages like Python. The use of data analytics in sports has become more relevant and important than ever. There are two fields of data analytics namely off-field analytics and on-field analytics. The four main types of data analytics are namely; descriptive analytics, diagnostic analytics, predictive analytics and prescriptive analytics

Descriptive analytics is a simple and superficial analysis that mainly focuses on things from the past. In general, it is a short process, where the analyst first collects, interprets and then presents information in a concise format. The analyst needs to ensure that others easily understand what is meant by the information, Wilson (2020). Teams in the Zimbabwe Premier Soccer League can easily carry out descriptive analytics by making use of old video recordings or file tapes.

Diagnostic analytics focuses on the ‘why’. The analysts involved in this work try to identify and explain anomalies in data sets. For example, if the data shows that there was a sharp drop in performance in April, it’s up to the data analyst to investigate the cause, Wilson (2020). Predictive analytics tries to predict what will happen in the future. Data analysts are mainly concerned with coming up with actionable insights from the data that the team can use to take new steps. Predictive analytics estimates the probability of an event like an injury, based on historical data, Wilson (2020). Football teams in the Zimbabwe Premier Soccer League could use descriptive data to predict what could take shape in the future performance of a team.

Prescriptive analytics is more complex than the aforementioned analytics and often includes elements of working with algorithms, machine learning, and modelling techniques. Effective use of this type of analytics can make all the difference to a team and have a huge impact on

decision-making and results, Wilson (2020). In prescriptive analytics the author investigated what course of action the football teams in Zimbabwe would undertake to enhance their teams' performance as a decision support. An analysis of the integrated data set was done and specific recommendations on the best course of action were given to the Zimbabwe Premier Soccer League teams.

2.2.1 Use of data analytics in performance enhancement in football

Player Recruitment: - data can provide a detailed overview of players' past performance, statistics, and abilities. Analysing this data can help a team determine if the players are a good fit for them, and what scenarios they are most likely to succeed in, Hayduk and Ted (2020). Zimbabwe Premier Soccer League teams could improve on player recruitment by using data analytics, most coaches do use gut feelings in selecting new players for their teams.

Injury Prevention: - with the use of innovative technology, teams can track a player's heart rate, ground covered and more. They can then use this data to identify behavioural patterns and risk factors that may lead to injuries, allowing them to create and implement specialized systems to keep players fit, healthy and injury-free, Swayne (2016). A lot of traumatic injuries have been suffered by players in the Zimbabwe Premier Soccer League teams because there had not been any use of data analytics in predicting behaviour that brings injuries.

Performance Optimization: - data can be used to analyse and improve the performance of athletes. This can include tracking heart rates, speed, movement and more to detect patterns and trends in play style. The findings can be utilized to create specialized regimens for players, resulting in more effective training, Simeone (2021). In this era very few players from the ZPSL do make it on the international podium due to failure by coaches and trainers to optimise their performance as a result of the absence of the use of data analytics.

Match Preparation: - before each match, the coaching staff might conduct data analysis to help them prepare for a game. Looking at the opposing team's patterns, strengths and weaknesses and comparing them with their own can help them create a specialized plan to win the game, Goes et al (2020). Teams in the ZPSL prepare their matches using judgemental information just like any spectator without specialised technological tools and this gives a false simulation to the coaches and technical team.

Game Analysis and Strategy: - analysts also take centre stage during the game itself. Technology permits them to receive real-time updates and statistics regarding player performance, allowing teams to make on-the-fly alterations and strategic choices. Following the match, data can also be used to create a detailed analysis of what went right and wrong, helping the team improve for next time, Goes et al (2020).

Analytics in Soccer: - analytics have been used in soccer to track players' on-field performance and movement, analyse their development, and make decisions about players in academies and when scouting. Analysis has also included dribbling, passing, and shooting. Top clubs, including Barcelona and Liverpool, have employed these tactics to considerable success, Goes (2020).

2.2.2 Data analytics technology in football

This allows coaches and managers the ability to analyse the following metrics, heat maps, area coverage, distance covered, heat maps and heartbeat measurements Guillermo (2020). Coaches can also use devices namely; fitness bands and video cameras converted to algorithms presented in the form of statistical datasheets. Football players also wear transponders which send certain waves to computer stations dotted around the football field, Catapult (2022). This device records 3-dimensional video and performance data in real life and it links every dataset to video for a new level of analysis in the background to team and player performance. It beams real-life video from numerous mobile devices from any site.

2.2.3 Match Tracker - This saves up to a corresponding staff member in terms of time saved. For example, “A coach comes in and asks to analyse all of team X’s goal kicks from the last season, at which point, before Match Tracker, we would have been faced with a decision to either spend roughly 40 hours pulling this together or be forced to say it wasn’t doable. Neither option was great, but now we can pull all that together in 20 minutes and even go a step further to filter those goal kicks by outcome, type, distance and so on, to get those we know they will want to see", Mathew Pearson Head of Performance Insights and Data Strategy Wolves F.C. (2020). In the ZPSL technical teams far-reaching time in a bid to

track opponents player performance using subjective decision-making processes and it is costly as many false diagnoses are done.

2.2.4 Python, R, Cloud and IOT – These are software used by mathematicians and statisticians in programming language for data analytics. Software R was developed by Ross Ihaka and Robert Gentleman as tools for data visualisation and modelling. These are used in making heat maps, graphs and line graphs. Useful general references for learning Python include Beazley and Jones (2013), Slatkin (2015), and Sweigart (2015). These could aid coaches in the Zimbabwean premier league to make quick informed decisions during play and improve workflow efficiency.

2.2.5 Biometrics – This is also an added leading-edge of data source for player and team performance, there are radio frequency devices, GPS devices, and biometric sensors. A notable vendor is Catapult Sports, which made GPS and accelerometer-based devices in Australia. Zebra Technologies also gives a radiofrequency ID (RFID) tag for location data and that aspect is being explored by a few professional teams. Adidas does have the Mi-Coach system which houses the GPS and biometric sensors. Several English Premier League teams use similar devices in practice, but they are not yet permissible in-game use, Lesezeit (2021). Biometric sensors could assist coaches in the ZPSL in determining metrics like speed, area covered and heat maps.

2.2.6 Benefits of data analytics in sports

Sports enterprises use data analytics to examine their athletes' performance and assess the recruitment necessary to heighten the performance of the team, Bean (2005). Coaches in the ZPSL could calculate the amount of time that would have been spent by a football player on the field of play. The statistics on the number of passes a player has made on the field can also be counted using data analytics technology. Comparison of a team's performance against others is also a possibility when using data analytics as well as the opponent's performance. A team can also increase the efficiency of the work by using data analytics and football managers in the ZPSL can have an insight into their team's collective efficiency therefore augmenting the whole team's performance.

2.2.7 Challenges faced in the use of data analytics in football

Finding a rising star of sports - An accomplishment of a sports career not only hinges on the athlete's capability but also is related to the athlete's team. Nurturing an exceptional athlete entails a lot of manpower and substantial resources. The rising star of sports refers to the players who are not exceptional in the middle of their peers and are at the commencement stage of their sports career, but they incline to become sports stars in the future, Madan (2019). This is however, not possible in the Zimbabwe Premier Soccer League, most upcoming players are not discovered and may end up absconding their participation in football because no one would have noticed their upcoming in terms of performance.

Unified Sports Big Data Platform - In the out-dated sports system, different sports institutions create independent sports data platforms in accordance with the needs of their clubs or teams, resulting in making a data Island, Haiyun (2020). There is a necessity to assimilate different sports systems and build a unified big service platform for sports big data in the Zimbabwe Premier League where every interested coach could just browse data on players and teams and analyse readily available data.

Privacy protections – This age of big data brings boundless value, but there are also some problems created in athletes' privacy protection. How to protect athletes' privacy and prevent sensitive information leakage in the process of sports big data development and application has become a new challenge. Evarian (2017) asserts that, it is necessary to implement fine-grained authority control and to cooperate with relevant data desensitization strategies to better protect athletes' privacy. There is no athlete privacy protection in Zimbabwe thereby risking the players to abuse or misuse of any data extracted from them.

Complexity and Bias - Certain analytics tools established by some companies are more like a black box model. What is inside the black box is not clear or the logic the system uses to learn from data and create a model is not readily evident. The use of these tools may be stress-free but the rationality of how decisions are made is unclear to anyone within the team.

2.3 Theoretical Review

Traditionally the first scouters used the old scouting theory of evaluating player performance by making decisions based on strength, speed, hitting ability and quickness Lewis (2003). A general list of guidelines that scouts look for is: strength. Generating speed, Full leg extension and follow through after making contact, and short stride. Scouts are instructed not to scout performance but to "watch for things that are done mechanically that will eventually bring

results and success", MLB (2001). When a scout perceives a player to be good, he then gives the player a certain rating. "The evaluated ratings in any respective category portray the player as having, or will have, an average skill of major league standards, currently or once he reaches major league competition", MLB (2001)

Another theory was based on the general manager of Oakland namely Billy Beane in his novel called The Moneyball, written by Michael Lewis. This theory does not give emphasise the body of the player or the physical apparatuses that the athlete has'. This theory clarifies the effortlessness of baseball Lewis (2013). The focal point of his theory included two statistics that is to say on-base percentage (OBP) and slugging percentage. The two statistics pooled to form a novel statistic called on-base plus slugging (OPS). In the Zimbabwe Premier Soccer League there is not even a novelty theory; the coaches are still using the traditional methods of old scouts thus basing decisions on gut feelings.

The field of learning analytics emerged from a confluence of existing activity and ideas as alluded to by, Elias (2011), coalescing at the first Learning Analytics and Knowledge (LAK) conference in 2011, Siemens (2013). This emergence of the field of learning analytics was spurred by the potential of big data and associated analytic techniques particularly in achieving learning impact at scale in open learning, Siemens (2013). The field continued a tradition that dates back several decades incorporating evolving technologies and techniques for computing, analysis, and modelling of data. As Rosé (2018) points out, learning analytics emerged during a period of 'strong empiricism' where there was a prevailing view that questions could be effectively answered simply through the collection and analysis of larger pools of data as averred by Anderson (2008). An explosion of available data from and about learners, with associated increases in power and effect size was facilitated through the increased use of various technologies in education. The efficacy of education based on data technology in Zimbabwe academia is regarded lowly, none of the techniques of learning analytics are being used by technocrats in the ZPSL teams.

Learning Management Systems (LMSs) and other Educational Technology (EdTech) tools created the fertile conditions for the emergence of learning analytics. Understandably there was great excitement about what was possible with this new data and the methods and analytical processes that were emerging from computer and data science, statistics, and mathematical modelling. In parallel, the theorising of the emerging learning analytics field

was engaged in attempts to position it concerning other data-informed fields of education, Siemens and Baker (2012); Balacheff and Lund (2013), and the growing interest in analytics across business contexts.

Given this foundation, it is perhaps not surprising that the initial emphasis of the field could fairly be described as focusing on emerging technologies and data availability, and the opportunities provided by these, Lang et al. (2022). This led to early questioning of the theoretical underpinning of learning analytics, asking if analysts were measuring what they valued, or simply valuing that which was easy to measure, Knight and Buckingham Shum (2017), or what could be done over what should be done. It would be an overstatement to claim that the earliest forays into learning analytics were atheoretical. However, there have been many who have claimed that the field lacked the theoretical foundation needed for real impact to be made, Gašević et al. (2016); Wise and Shaffer (2015).

2.4 Thematic Review

The convergence of data science and sports analytics has ushered in a new era of unprecedented insights, transforming the landscape of sports performance optimization and fan engagement as alluded to by, Xiao et al. (2023) and Najjar (2023). The use of data science in sports analytics goes beyond the traditional statistical analyses of player performance. It encompasses a holistic approach that leverages advanced algorithms, machine learning, and predictive modelling to delve into the intricate nuances of sports dynamics. This review focuses on the dual facets of this burgeoning field: the refinement of athlete performance and the elevation of fan engagement, Shen et al. (2023).

On the performance optimization front, data science provides a robust framework for dissecting vast datasets comprising player statistics, biometric readings, and game dynamics. This enables coaches and analysts to glean actionable insights, fostering informed decision-making in areas ranging from strategic game planning to personalised training regimens, de Oliveira et al. (2023). The integration of cutting-edge technologies, such as wearables and sensors, propels this field forward, offering an unprecedented depth of understanding into an athlete's physical and mental state, Ma (2022). Simultaneously, the impact of data science extends to the stands, transforming how sports enthusiasts interact with their favourite teams.

Su et al. (2022) second that, in the realm of modern sports, the marriage of data science and analytics has reshaped the way players and coaches approach performance optimization. From traditional player statistics to cutting-edge machine learning algorithms and biomechanical data, this section delves into the multifaceted landscape of how data science is revolutionizing the understanding and enhancement of player performance. Traditionally, player performance has been evaluated through standard statistical measures such as goals scored, points scored, rebounds, assists, and shooting percentages. However, data science has elevated this analysis by incorporating advanced statistical models. Beyond mere point tallies, these models consider nuanced aspects of a player's contributions, offering a more holistic perspective on performance, Ubochi (2023). Player performance in the Zimbabwe Premier Soccer League is still being evaluated through old statistical measures like shooting percentages and goals scored; player performance would hence be optimised if teams could incorporate the use of data analytical tools.

For instance, Player Efficiency Rating (PER) is a sophisticated metric that combines various statistics to gauge a player's overall impact during their time on the field. It considers not only scoring but also assists, shots, tackles, and blocks, providing a more comprehensive evaluation of a player's effectiveness. The advent of advanced metrics has further refined player performance analysis, Terne and Franks (2021). Metrics like True Shooting Percentage (TS%) account for the efficiency of a player's scoring. Impellizzeri et al. (2020) explain that machine learning algorithms analyse vast datasets, considering factors such as player workload, fatigue levels, and biomechanical data to identify patterns indicative of injury risk. By employing predictive analytics, teams can anticipate when an athlete might be at risk of injury and implement preventive measures. For instance, load management strategies can be customized based on individual player data, ensuring that athletes remain within optimal performance thresholds while minimizing the risk of overexertion and injury, Oliveira and Newell (2023). Injury risk predictions and biomechanical data cannot be extracted by coaches in the Zimbabwe Premier Soccer League thus players are exposed to a very high risk of proneness to injury.

Machine learning algorithms analyse performance data, biomechanical metrics, and recovery patterns to design personalized training programs that maximize each athlete's potential, Teikari and Pietrusz (2021). For example, if a football player consistently struggles with fatigue in the later stages of the game, data-driven insights can inform the development of

targeted conditioning. Jayanthi et al (2022) allay that the exercises to improve endurance in this individualized approach not only enhances performance but also minimize the risk of injuries associated with overtraining or inadequate preparation. Biomechanical data captured through wearables and sensors, provides real-time insights into an athlete's movements, kinetics, and physiological responses. Wearable devices, such as smart watches and fitness trackers, offer continuous monitoring of vital signs and physical activity, allowing for a comprehensive understanding of an athlete's baseline and fluctuations during training or competition.

Sensors embedded in equipment or clothing can capture biomechanical metrics related to joint angles, acceleration, and impact forces, McDevitt et al. (2022). In sports like soccer, GPS trackers can monitor player positioning and distance covered during a match. This real-time data empowers coaches to make immediate decisions regarding player substitutions, fatigue management, and in-game strategies, Cossich et al. (2023). Biomechanical responses and physiological changes cannot be monitored in a player in the Zimbabwe Premier League teams by coaches because of the lack of wearable devices even at personal levels, fatigue levels cannot be monitored posing a tragedy to the players.

Beyond real-time monitoring, biomechanical data aids in the post-game analysis and refinement of game tactics. By examining the biomechanics of successful plays or identifying movement patterns associated with specific outcomes, coaches can optimize strategies for future games, Shan et al. (2019). By embracing these advancements, athletes and coaches in the Zimbabwe Premier Soccer League not only gain a more nuanced understanding of individual and team performance but also unlock the potential for personalized training regimens, injury prevention strategies, and the fine-tuning of game tactics.

2.5 Conclusion

From the analysis that was made by the researcher there are a lot of gaps from what other researchers have studied relating to the use of sports data analytics in football. A lot of teams are not accustomed to using sports data analytics due to various reasons. There are a lot of sports data technologies that can be used both in the field and off the field and these seem to be largely absent in the Zimbabwean set-up. The reason behind this will be noticed as the data is collected from different experts in football.

2.6 Summary

This chapter primarily focused on the theoretical and conceptual framework of the data analytics and strategies used by football clubs. Furthermore, the literature reviewed was

analysed on the challenges and benefits of using sports data analytics by football clubs in the Zimbabwe Premier Soccer League teams in Zimbabwe.

CHAPTER 3

MATERIALS AND METHODS

3.1 Introduction

The chapter seeks to make available a detailed explanation of the research methodology and the design that will be used to gather information for the study. This chapter identified the different research strategies to be used by the researcher and justified the methods to be used. The methodology includes research design, population and sampling techniques, and data collection procedures and data analysis.

3.2 Research approach

The researcher used a mixed method approach which associates elements of both quantitative research and qualitative research. The mixed method approach aids the researcher in achieving a more comprehensive image than a detached quantitative or qualitative study, because it assimilates the profits of both methods. Cresswell et al (2018) aver that mixed method approaches permit researchers to put into use a multiplicity of methods, conjoining inductive and deductive thinking, and offsetting limitations of entirely quantitative and qualitative research through a balancing style that makes the best use of strength of each data type and enables an all-inclusive acceptance of health issues and potential resolutions. Mixed

methods may be used to produce a strong narrative and elucidation of the data. It makes quantitative results more comprehensible, or appreciates broader applicability of small-sample qualitative findings.

3.3 Time horizons

The researcher used a cross-sectional time horizon in assembling data. A cross-sectional study looks at data at a single point in time. The partakers in this type of study were carefully chosen based on particular variables of interest. Cross-sectional studies are observational and are known as descriptive research not causal or relational. This means that one cannot use them to decide the source of something. Researchers record the information that is present in a population, but they do not influence variables, Cherry (2022).

This type of research was used to describe characteristics that existed in the Zimbabwe Premier Soccer League teams on the use of sports data analytics.

3.4 Research Strategy

This study used the convergent-parallel research strategy by concurrently gathering qualitative and quantitative data for stakeholders in the Premier Soccer League by means of interview and questionnaires. This was then followed by combining and comparing interviews and questionnaires at the point of interpretation. Patton (2015) affirms that this approach encompasses the collection of different but corresponding data on the same subject. Hence, it is used for the bringing together of data followed by the scrutiny of quantitative and qualitative data. This approach is mostly mentioned as the coexisting triangulation design (single-phase) since the data is collected and analysed independently but at the same time, Palys and Atchison (2014).

The research method permitted the researcher to discover and investigate the use of sports data analytics by football clubs affiliated with the Zimbabwe Premier Soccer League. In the study, quantitative data was collected from the coaches and players of Zimbabwe Premier Soccer League teams using questionnaires and qualitative data was collected through conducting structured interviews with football coaches and managers of the clubs.

The target population in this research included the Team Managers and Team Coaches from Zimbabwe Premier Soccer League teams in Zimbabwe in the Northern region. The researcher

used them to collect essential information to find answers to the research problems as they are the ones who are profoundly involved in the fostering and improvement of the sport.

3.5 Population and Sampling

3.5.1 Population

The research was confined to football teams playing their games in the Zimbabwe Premier Soccer League. There were eighteen (n=18) Zimbabwe Premier Soccer League teams. The research population consisted of nine (n=09) Zimbabwe Premier Soccer league team coaches, Northern region Coaches (3), Central region Coaches (2), Southern region Coaches (2), and Eastern region Coaches (2).

3.5.2 Sampling Technique

Researchers do not have the time and resources to analyse the whole population thus they do apply a sampling technique to moderate the number of cases Latpate et al (2021). It is impracticable to study a whole population. The researcher used a technique of non-probability purposive or subjective sampling. The items for the sample were deliberately selected; participants were selected centred on the researcher's evaluation of which gave the required data to respond to the research questions (Gray, 2014). The coaches were chosen based on their ability to provide vital information on enhancing performance through the use of sports data analytics. This type of sampling permitted the researcher to collect information about a population grounded on results from a subdivision of the population. The target population in this research include a total of 18 teams with a coach each therefore the research population was 18 participants.

The researcher made use of the questionnaire survey where participants were selected using a random selection procedure. All the appropriate individuals had a chance of picking the sample from the entire sample space. Interview participants were selected using purposive sampling procedures.

3.5.3 Sample Size Determination

The researcher used theoretical sampling procedures to determine the sample size for the qualitative strand; Theoretical saturation was reached after ten interviews. The sample size of 10 participants from the Zimbabwe Premier Soccer League teams for the questionnaire survey was reached using that rule of thumb.

3.6 Data collection procedures

3.6.1 Pilot Study

A pilot study is a small feasibility study designed to test various aspects of the methods planned for a larger, more rigorous, or confirmatory investigation, Arain et al. (2010). The main drive of a pilot study is to thwart researchers from doing a large-scale study with no ample information on the methods anticipated; essentially a pilot study is done to prevent the manifestation of a fatal error in a study which will be costly in money and time, Polit and Beck (2017). This may start by assessing the possibility of achievement of planned participant retention and recruitment strategies.

When the researcher is using a psychometric or observational instrument, it is prudent to find out if it is applicable (validity and reliability test) which may be used in the target population under the recommended conditions. The procedure of data collection was divided into two segments which are the pre-test and the main study.

The researcher administered questionnaires to a couple of teams in the Zimbabwe Premier Soccer League to identify questions and thematic areas that would be useful to pursue in-depth interviews. The questionnaires were completed by the coaches from the teams. The results of the pilot study indicated that the structured interview guide was valid and reliable as 95% of the answers were the same across the board. The questionnaire pilot study gave the researcher a vision of how to craft a real interview guide for a bigger research project.

3.6.2 Main Study

The researcher used a number of methods to collect data, qualitatively a Semi-structured interview and a questionnaire quantitatively. These data collection tools were distributed as follows; Semi-structured interviews for the coaches and ZIFA officials and questionnaires for football players.

3.6.3 Questionnaires

Questionnaires are research tools containing a chain of questions used to gather valuable data from respondents. The instruments include both written and oral questions and comprise an interview-style format. Questionnaires can be qualitative or quantitative and may also be conducted by telephone, on paper, online or face-to-face, and questions don't certainly have to be administered with a researcher in his presence, Gaziano (2015).

3.6.4 Semi-Structured Interviews

A semi-structured interview schedule is simply the list of topics and associated questions that the interviewer asks the participant, Charmaz (2014). The schedule of the interview is assimilated into a qualitative approach that would take the reader through the details of a particular method. The interview schedule causes some problems where the respondents give wrong responses that are collected and resultantly hindering the whole efficacy of the study Van Manen (2016).

Semi-structured interviews were conducted in person with the coaches of the football clubs in the Zimbabwe Premier Soccer League by the researcher after seeking permission from the Zimbabwe Football Association and the Zimbabwe Premier Soccer League. The researcher visited the coaches at their club houses and training grounds in a conducive environment for interviews. The researcher also gave appointment dates for interviews to the team managers of football clubs that were included in the sample of the study. The researcher conducted interviews on the dates scheduled and wrote down answers to interview questions with the respondents' permission.

3.7 Data analysis and presentation

The researcher checked the interview and questionnaire answers for completeness. The tables and charts were used to present the data visually. The data which was collected quantitatively was analysed using the software SPSS and the one that was collected using qualitative method was analysed using Nvivo. For the Nvivo, themes were created after coding the responses. The SPSS was used to perform the descriptive statistical analysis and parametric tests of questionnaire data.

3.8 Validity and reliability

To ensure consistency and reliability the researcher made sure that the same interview questions and questionnaire were used for all interviewees across the league.

Validity and reliability are means of proving or showing the thoroughness of research procedures and the dependability of research results. The research should not be deceptive to the researcher if it is going to be useful, Swanson (2014). The credibility of a research paper should rely on various research features that are; the initial research question and how the data is being depended on counts on a number of research features: the initial research question, how data is being composed and scrutinised and later the conclusion inferred.

When analysing available data or designing research projects, the researcher must be cognisant of validity and reliability from the beginning. Research writers should offer an impression of the elementary codes of validity and reliability with respect to qualitative and quantitative research. About the two terms, reliability is possibly modest to comprehend and prove, Klassen et al (2014). Reliability defines how far a specific test, formula or instrument, such as a questionnaire, will be able to yield the same results in diverse conditions, presuming that there have not been any changes.

Validity is a very elusive insight and is almost the juxtaposition of what we believe we are evaluating to what we are projected to measure. A valid test is the one that measures what it anticipates to measure. Here, validity is all the same as accuracy, and it is not an outright test which is wholly impeccable. The writer ensured validity and reliability were taken cognisant of when data was being collected from the managers and coaches from the Zimbabwe Premier Soccer League teams.

3.9 Ethical considerations

The researcher saw it necessary that research ethics were an imperative constituent of the research study. The information collected would be treated as secret and would not be disclosed even the identity of those who participated. The research has to carry out the research with no incidences of insulting those who will participate. That explains that the researcher should need consent from the involved participants who are the Zimbabwe Premier Soccer League and Zimbabwe Football Association officials in Zimbabwe.

The researcher conducted the research in obedience to Bindura University of Science Education regulations which guided him and the researcher religiously to follow the following regulations and protocols:

An introductory letter from the Bindura University of Science Education Department of Sport Science was given to the Zimbabwe Premier Soccer League board to secure permission to conduct the data collection process in the league as well as to team managers and coaches of all the teams involved in the process.

Coaches of teams were notified of the research study and were asked to participate voluntarily and informed consent was observed. The members were interviewed through a structured interview and they also completed some questionnaires freely, the researcher assured them that he would not disclose anything to anyone about their disclosure. The

researcher assured the participants on the issue of anonymity and confidentiality. It was also observed that the researcher used pseudonyms instead of the real names of the participants. The questionnaire and interview sheets were kept in a strong room and the participants were told that they would be destroyed by fire after the research.

3.10 Chapter Summary

The chapter deliberated on the research methodology which is going to be used in this study. Qualitative methodology was used in this study as it enabled the researcher to analyse data qualitatively. The methodology was suitable for the researcher to get reliable information from the Zimbabwe Premier Soccer League and Zimbabwe Football Association officials in Zimbabwe.

CHAPTER 4

DATA ANALYSIS AND PRESENTATION

4.1 Introduction

This chapter presents quantitative and qualitative data which was collected on the use of sports data analytics by Zimbabwe Premier Soccer League teams in Zimbabwe. Sources of primary data were the interview and questionnaire, this chapter aims to analyse and present the findings of this study. In this chapter, data was presented in the form of graphs, charts and tables to boost easier comprehension of the research findings. The chapter also presents and confers the demographic data, response rate and findings related to the research objectives.

4.2 Response Rate

Table 4.1: Questionnaires

Number of Questionnaires prepared	Number of Questionnaires completed	Response rate percentage
10	10	100%

Table 4.1 shows the response rate for the questionnaires administered by the researcher. The researcher accomplished to prepare and had 10 questionnaires dispatched to respondents navigating from various football clubs in the Zimbabwe Premier Soccer League. These involve 10 coaches from the 20 Premier League Clubs from within the ZPSL. All the participants managed to take part and all the questions were responded to. The overall response rate was 100%. The researcher approached the respondents at a convenient time and the researcher was even able to attend some training sessions and league games where he could easily get the targeted participants. The convenience enabled the researcher to reach all the targeted respondents.

Table 4.2 Interviews

Number of Interviews structured	Number of interviews held	Response rate percentage
10	10	100%

Table 4.2 shows the response rate for the interviews led by the researcher. The researcher successfully interviewed 10 interviewees traversing from diverse football clubs in the

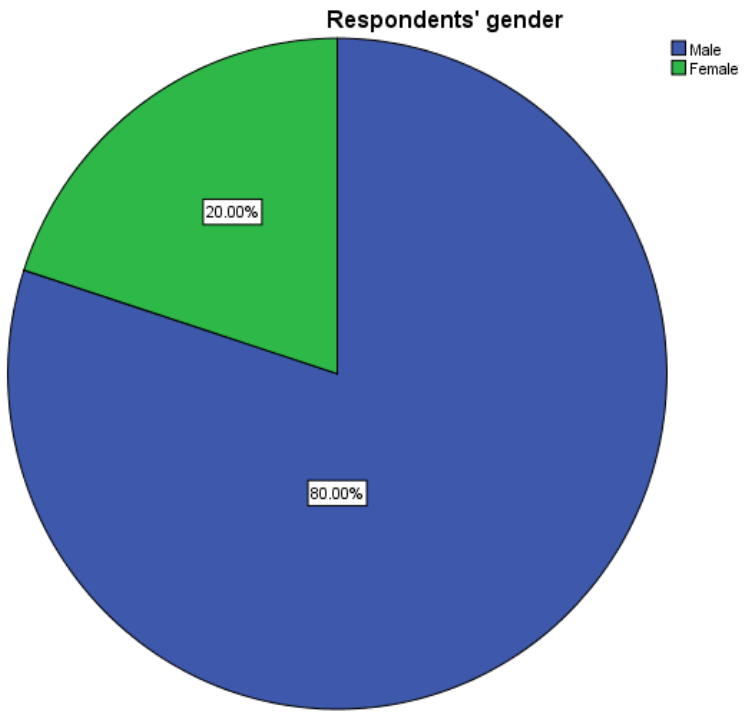
Zimbabwe Premier Soccer League. These comprise the 4 team managers from the premier league clubs as well as 6 coaches from within the ZPSL. All the participants managed to take part and all the questions had responses. The overall response rate was 100%. The researcher had earlier prepared for suitable places to interview the participants and he was even able to attend some training sessions and competitive games where he could easily get the targeted participants. The opportunity made it easy for the researcher to reach all his targeted participants.

4.3 Demographic Data.

4.3.1 Gender

Figure 4.1

Respondents' Gender



Out of the 10 respondents that completed questionnaires in the study, 80% were male while 30% were female as shown in Figure 4.1. The male gender was dominant over their female counterparts because males are more involved in sports than females in Zimbabwe. The supremacy of the male member synergies with Mugari and Bulaliya's (2016) school of thought which proclaims that Zimbabwean sport has from a far-reaching age been controlled

by males as females focus much on household work and do not give themselves time for recreation and sports.

4.3.2 Age

Figure 4.2

Respondents' Age

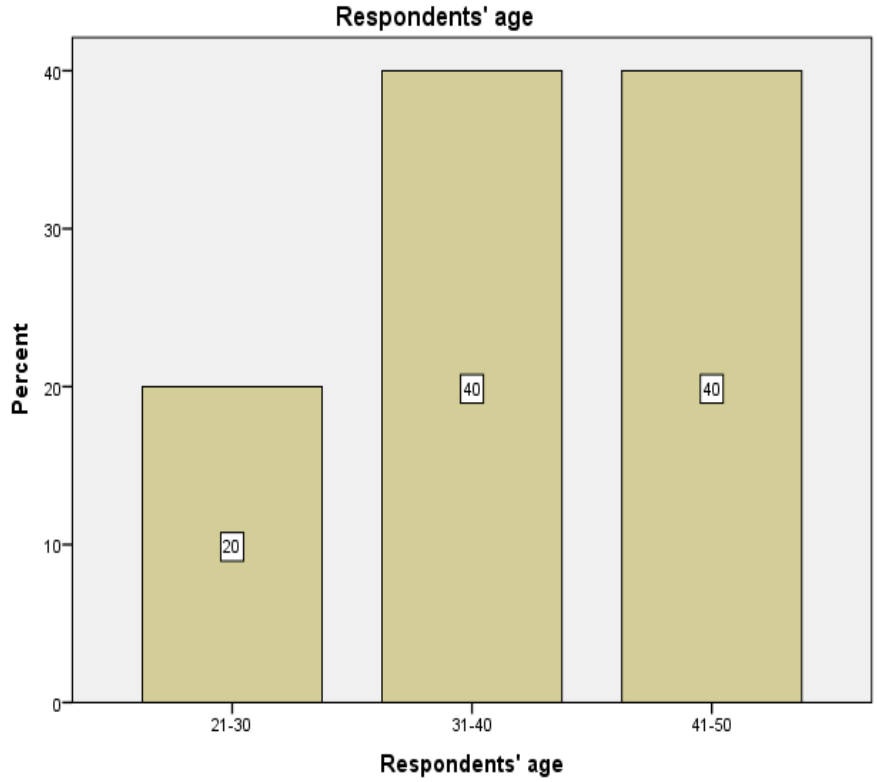


Figure 4.2 displays the respondents by age and the age groups were categorised into 6 divisions that is; Below 20 years, 21-30 years, 31-40 years, 41-50 years, 51-60 and Over 60 years. The 31-40 years and the 41-50 years comprised the majority with 40% each followed by the 21-30 years age group with 20%. The dominion of the age groups 31-40 and 41-50 can be necessitated by the fact that these ages are highly involved in Coaching Football in Zimbabwe in the Zimbabwe Premier Soccer League. The 21-30 had the lowest percentage constituting 20% since very few coaches are involved in coaching football at the highest level at that age in Zimbabwe.

4.3.3 Highest Academic Qualification

Figure 4.3

Respondents' Academic Qualifications

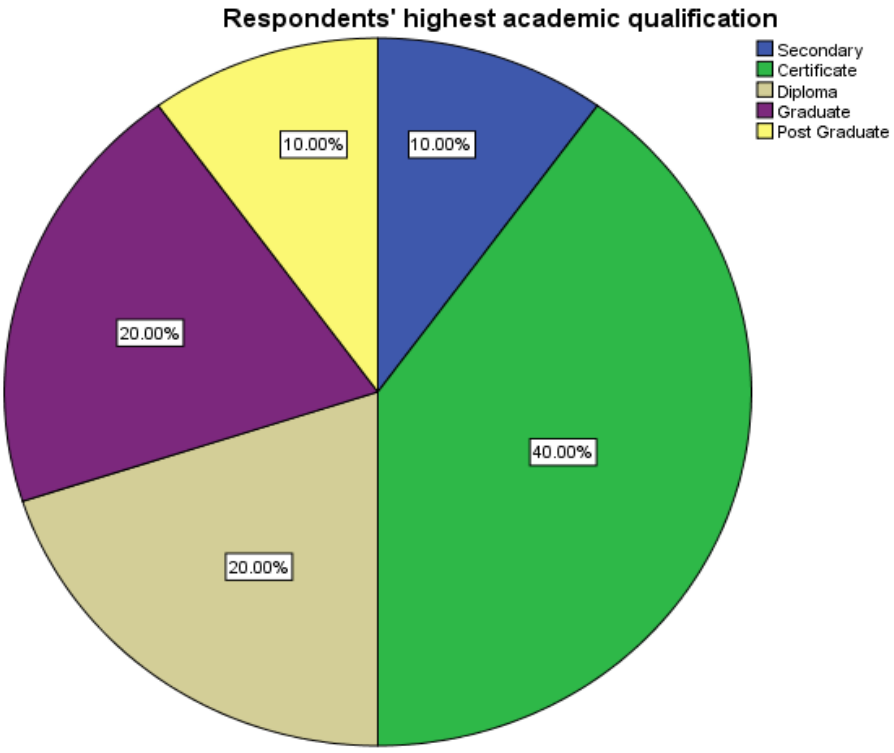


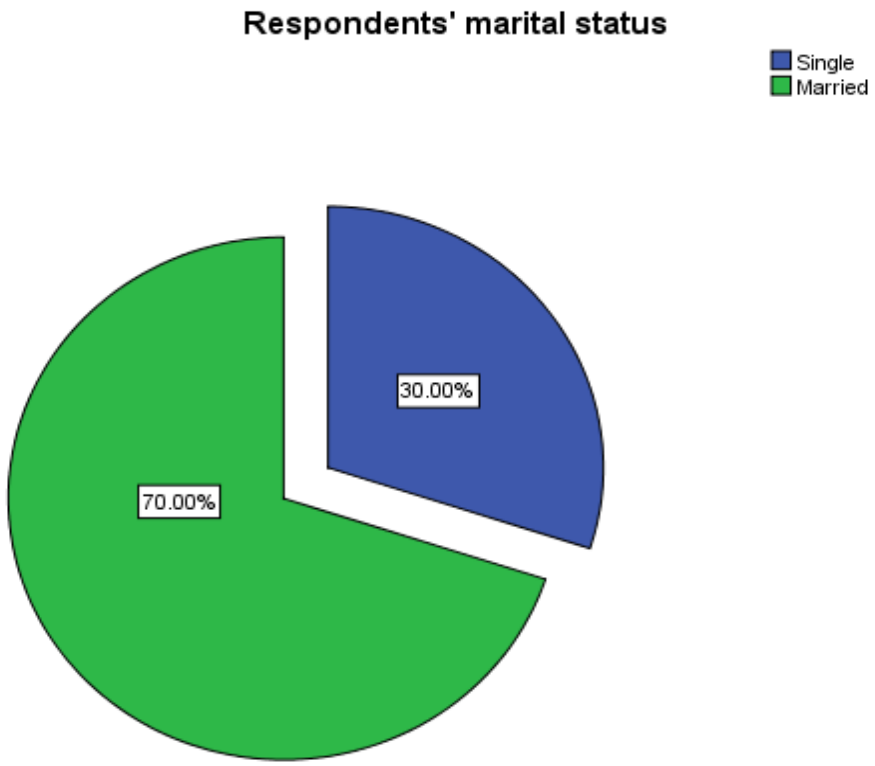
Figure 4.3 shows the highest academic qualifications of the respondents who took part in the interviews and who responded to the questionnaires. The majority of the respondents were those with a certificate as an academic qualification and they constituted 40%. The second is those with diplomas and graduates both have 20%. Post graduates and those who went up to the secondary level constituted 10% each. The majority of coaches in the Zimbabwe Premier Soccer League have certification from The International Federation of Football (FIFA) in the form of FIFA Levels A to C certificates.

4.3.4 Marital Status

Figure 4.4 depicts the marital status of the respondents showing that the majority are married constituting 70% while those who are still single constitute 30%. The majority of those who were single are from the age group 21-30 years who presumably have not yet chosen to get married.

Figure 4.4

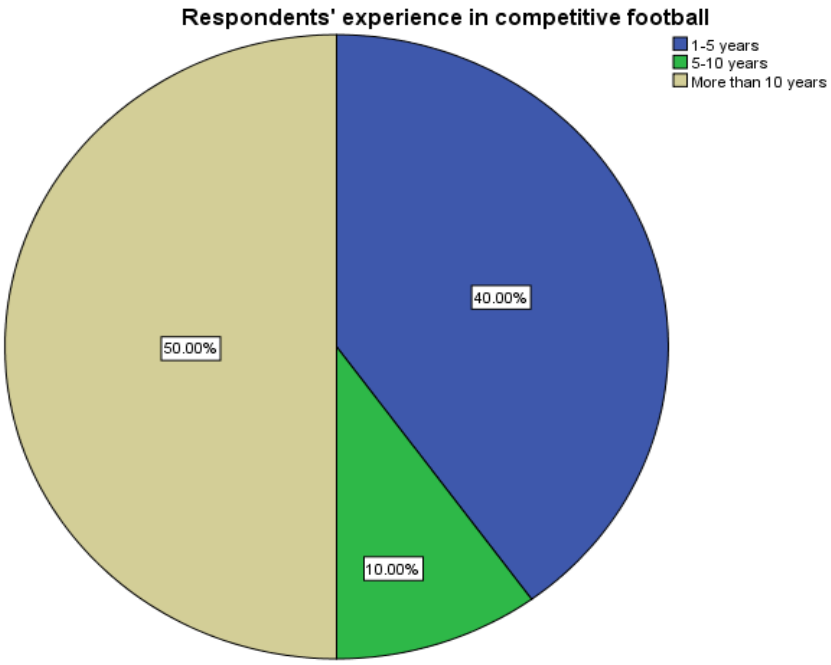
Respondents' Marital Status



4.3.5 Experience in Competitive Football

Figure 4.5

Respondents' Experience in Competitive Football



As represented in Figure 4.5, it shows that 50.00% of the respondents had experience in coaching football with their clubs for 10 years and above and this was the most appropriate sample. This gave an impression that the most experienced coaches are in that category, in the Zimbabwean Football League, teams rarely change coaches or opt for younger coaches. Those who are coaches with their football clubs and with 1-5 years constituted 40% and this is mainly due to the young or aspiring coaches who are assistants to the old mature coaches who rarely retire or leave their teams. Those with 5-10 years have 10% and these also fall in the category of new junior coaches in the ZPSL who are very few.

4.4 Presentation and analysis of data linked to the research objectives

4.4.1 What are the current levels of application of data analytics as a performance enhancement tool by Premier League football Teams in Zimbabwe?

Table 4.3: One-Sample Statistics

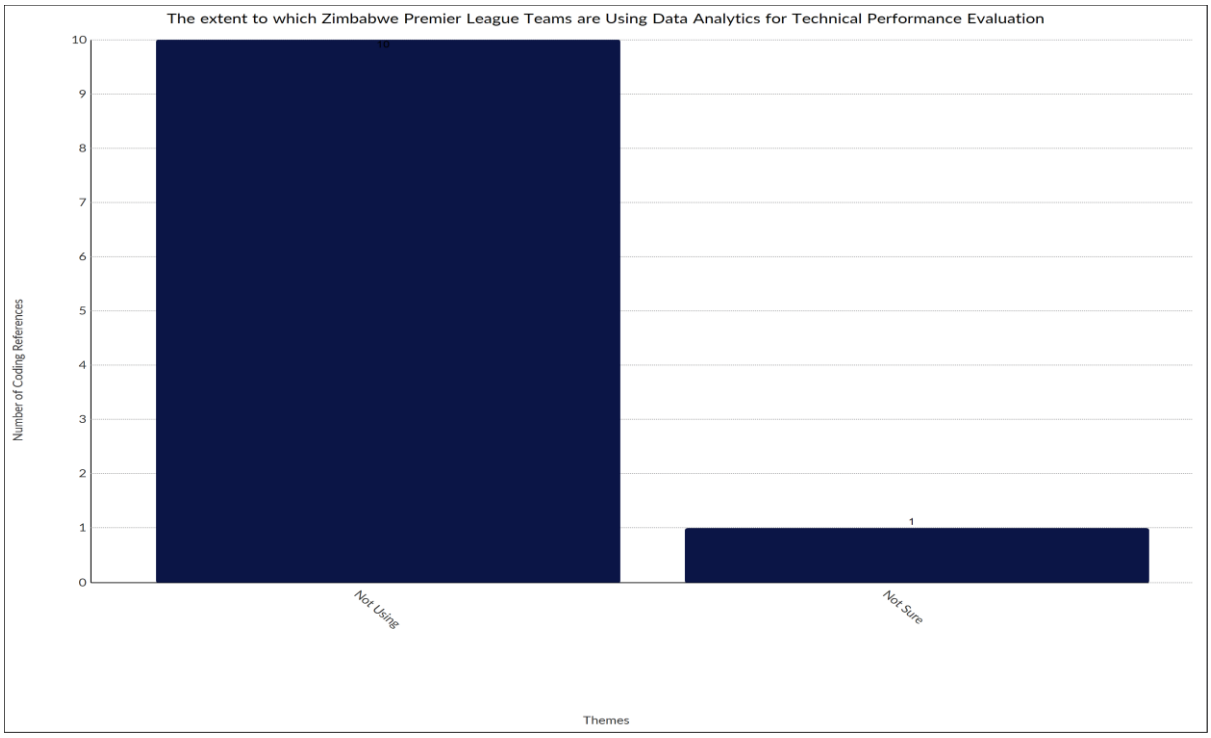
	N	Mean	Std. Deviation	Std. Error Mean
My club is currently using data analytics for its talent identification and scouting programmes	10	2.60	1.506	.476
My club is currently using data analytics as an injury prevention and management tool	10	2.50	1.581	.500
My club is currently using data analytics as a tactical planning and decision-making tool	10	2.70	1.418	.448
My club is currently using data analytics as a technical performance evaluation tool	10	2.70	1.418	.448
My club is currently using data analytics to evaluate the physical fitness levels of athletes	10	2.70	1.418	.448
My club is currently using data analytics to evaluate the mental fitness levels of athletes	10	2.60	1.506	.476

It can be noted that the mean scores for all the variables under consideration were less than the Test Value (3.0) which shows that data analytics was not currently being sufficiently used to perform the function under consideration in the Zimbabwe Premier Soccer League.

In the qualitative strand, interviews were used to determine the current levels of application of data analytics as a performance enhancement tool by Premier League football Teams in Zimbabwe. The NVivo 14 software was used to organize the resultant data into themes as presented in Figure 4.6.

Figure 4.6

Current Levels of Adoption of Data Analytics



The interviewees were examined in the interviews to explain on the current levels of application of data analytics as a performance enhancement tool by Premier League football Teams in Zimbabwe. The responses from the ten interviews were structured into themes in NVivo 14, as illustrated in From Figure 4.6. Ten (10) coding references show that the ZPSL teams are not using sports data analytics whereas one (1) coding reference indicated uncertainty in the use. These results confirm the findings obtained using questionnaires in showing that data analytics was not currently being extensively used by Premier League football teams. The findings from the questionnaires do resemble what was exposed when the interviews were conducted.

4.4.2 What factors have shaped the current levels of adoption of data analytics by Zimbabwean Premier League Football teams?

A One-Sample T-test with a Test Value of 3.0, showing a midpoint of a 5-point Lickert scale was used to measure factors have shaped the current levels of adoption of data analytics by Zimbabwean Premier League Football teams as presented in Table 4.4. In the test:

The test values that are less than the Test Value (3.0) show that the factor under consideration was a significant determinant of the current levels of adoption of data analytics.

The test values equivalent to the Test Value (3.0) point out that the factor under consideration was neither a significant nor an insignificant determinant of current levels of adoption of data analytics by Zimbabwe Premier Soccer League teams.

Table 4.4: One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
-The current level of adoption of data analytics by Zimbabwean Premier Soccer --League teams is influenced by the availability of technological infrastructure	10	3.40	.699	.221
-The current level of adoption of data analytics by Zimbabwean Premier Soccer --League teams is influenced by the availability of financial resources	10	3.80	1.135	.359
-The current level of adoption of data analytics by Zimbabwean Premier Soccer --league teams is influenced by the data analytics expertise levels of the technical staff	10	3.80	1.135	.359
-The current level of adoption of data analytics by Zimbabwean Premier Soccer --League teams is influenced by resistance to change among the key decision-makers in the teams	10	4.00	.667	.211
-The pursuit of competitive advantage is a key driver for the adoption of data analytics by Zimbabwean Premier Soccer -	10	4.20	.632	.200

-Collaboration and knowledge sharing within the football community have influenced the adoption of data analytics by Zimbabwean Premier Soccer League teams	10	3.90	.738	.233

The results show that availability of technological infrastructure, availability of financial resources, the data analytics expertise levels of the technical staff, levels of resistance to change among the key decision-makers in the team, the pursuit of competitive advantage and collaboration and knowledge sharing within the football community all recorded mean scores which were above the test value and hence they were significant determinants of the current levels of adoption of data analytics by Zimbabwe Premier Soccer League teams.

Figure 4.7

Nvivo generated word cloud on the Impact of the Current Level of Application of Data Analytics on Talent Identification and Scouting

The results presented in Figure 4.7 show that the current level of application of data analytics has no impact on the talent identification and scouting programs run by the ZPSL teams. Interviews were also used to determine the impact of current levels of application of data analytics as a performance enhancement tool by Premier League football Teams on their technical performance. The NVivo 14 software was used to organize the resultant data into themes as presented in Figure 4.8.

Figure 4.8

Impact of the Current Level of Application of Data Analytics on Technical Performance

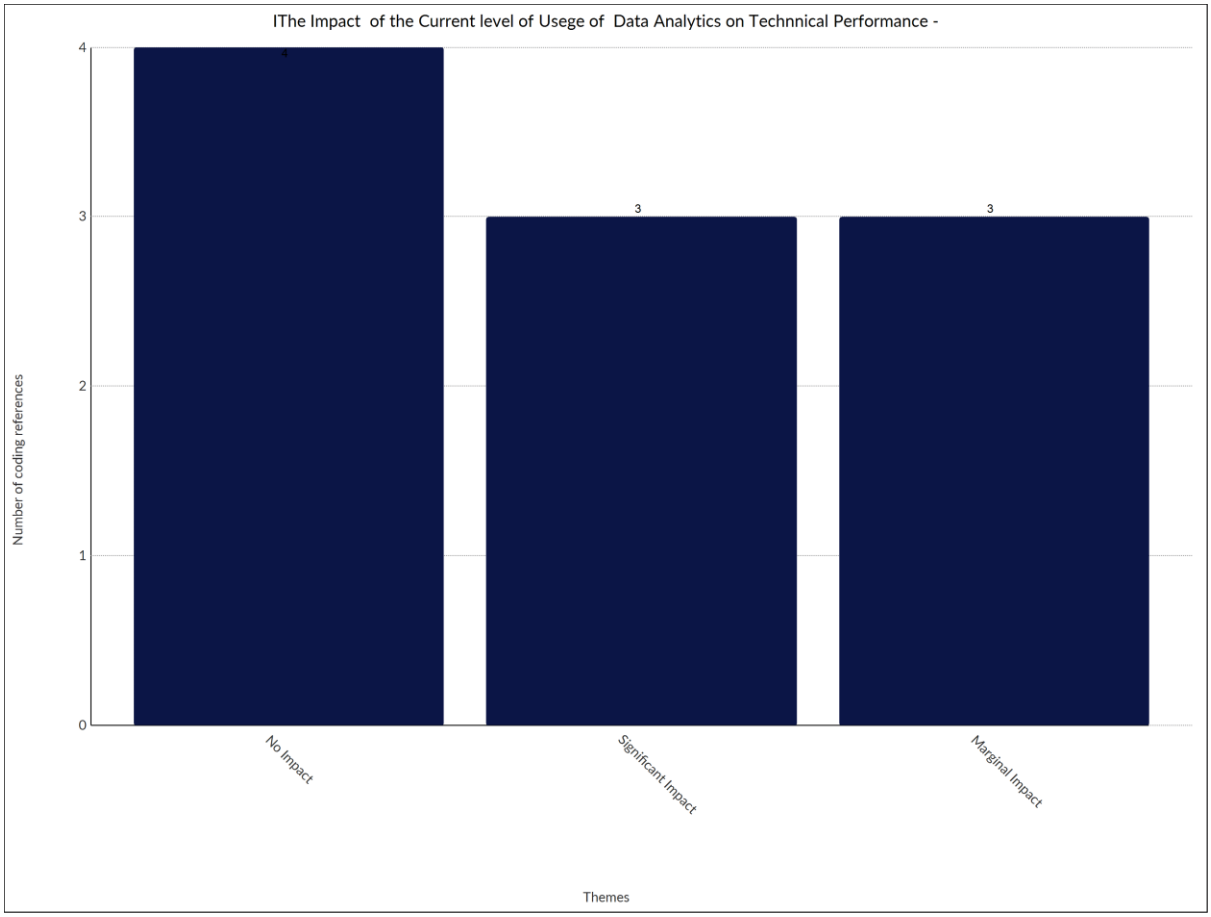


Figure 4.8 shows that most of the respondents acknowledged that there is some impact even though it is in a different magnitude. Four (4) coding references show that current levels of application of data analytics as a performance enhancement tool by Premier League football teams had no impact on their technical performance. Three (3) coding references showed that current levels of application of data analytics as a performance enhancement tool by Premier League football teams had a significant impact on their technical performance. In the same vein, three (3) coding references showed that current levels of application of data analytics as a performance enhancement tool by Premier League football teams had a marginal impact on their technical performance.

Interviews were also used to determine the impact of current levels of application of data analytics as a performance enhancement tool by Premier League football Teams on their tactical performance. The NVivo 14 software was used to organize the resultant data into themes as presented in Figure 4.9.

Figure 4.9

Impact of the Current Level of Application of Data Analytics on Tactical Performance

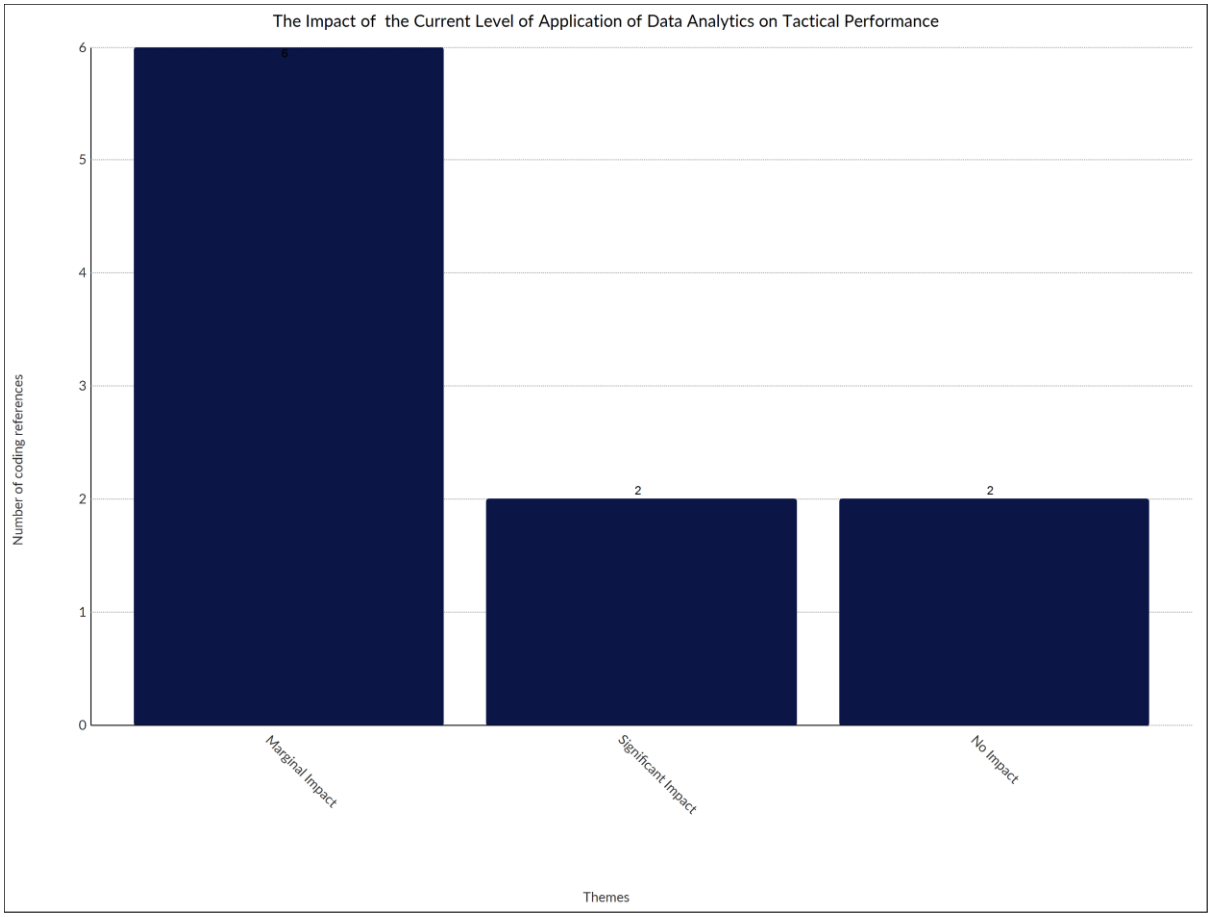


Figure 4.9 shows that six (6) coding references showed that current levels of application of data analytics as a performance enhancement tool by Premier League football teams had a marginal impact on their tactical performance. Two (2) coding references showed that current levels of application of data analytics as a performance enhancement tool by Premier League football teams had a significant impact on their tactical performance. On the other hand, two (2) coding references showed that current levels of application of data analytics as a performance enhancement tool by Premier League football teams had no impact on their tactical performance.

Figure 4.10

The Impact of the Current Level of Application of Data Analytics on Athlete Fitness

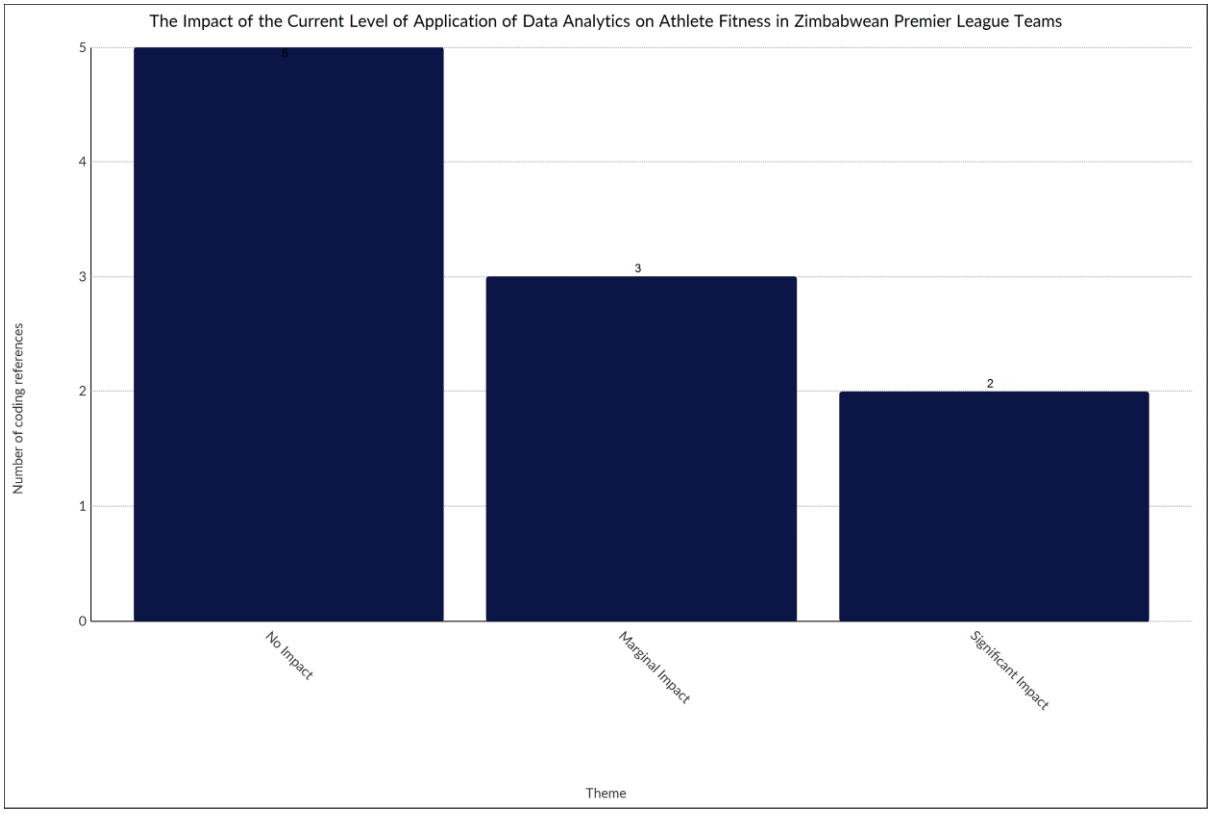


Figure 4.9 shows that six (6) coding references showed that current levels of application of data analytics as a performance enhancement tool by Premier League football teams had a marginal impact on their tactical performance. Two (2) coding references showed that current levels of application of data analytics as a performance enhancement tool by Premier League football teams had a significant impact on their tactical performance. On the other hand, two (2) coding references showed that current levels of application of data analytics as a performance enhancement tool by Premier League football teams had no impact on their tactical performance. Interviews were also used to determine the impact of current levels of application of data analytics as a performance enhancement tool by Premier League football Teams on athletes fitness. The NVivo 14 software was used to organize the resultant data into themes as presented in Figure 4.10.

4.4.3 What measures can be adopted to increase the usage of data analytics by the Zimbabwe Premier Soccer League teams.

In the quantitative strand, questionnaires were used to determine the impact of the current levels of adoption of data analytics by Zimbabwean Premier Soccer League teams on team performance. A One-Sample T-test ($\alpha = 0.05$) with a Test Value of 3.0, indicating the midpoint of a 5-point Likert-type scale, was used to analyse the resultant data as presented in Table 4.5.

In the analysis;

Any mean scores that were greater than the Test Value (3.0) indicate that data analytics had a significant impact on the performance variable under consideration in Zimbabwean Premier Soccer League teams.

Any mean scores that were less than the Test Value (3.0) indicate that data analytics had no significant impact on the performance variable under consideration in Zimbabwean Premier Soccer League teams.

Mean values equal to the Test Value (3.0) indicate that the respondents were neutral about whether data analytics had an impact on the performance variable under consideration in Zimbabwean Premier Soccer League teams.

Table 4.5: One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Data analytics plays a pivotal role in minimizing injury risks in Zimbabwean Premier Soccer League teams	10	3.80	.919	.291
Data analytics has improved the talent identification outcomes in Zimbabwean Premier Soccer League teams	10	3.50	1.269	.401
Data analytics has improved the tactical performance of Zimbabwean Premier Soccer League teams	10	3.40	.966	.306
Data analytics has improved the technical performance of Zimbabwean Premier Soccer League teams	10	3.30	1.059	.335
Data analytics has improved the psychological performance of Zimbabwean Premier Soccer League teams	10	3.40	1.174	.371
Data analytics has improved the fitness levels of Zimbabwean Premier Soccer League teams	9	3.22	1.093	.364

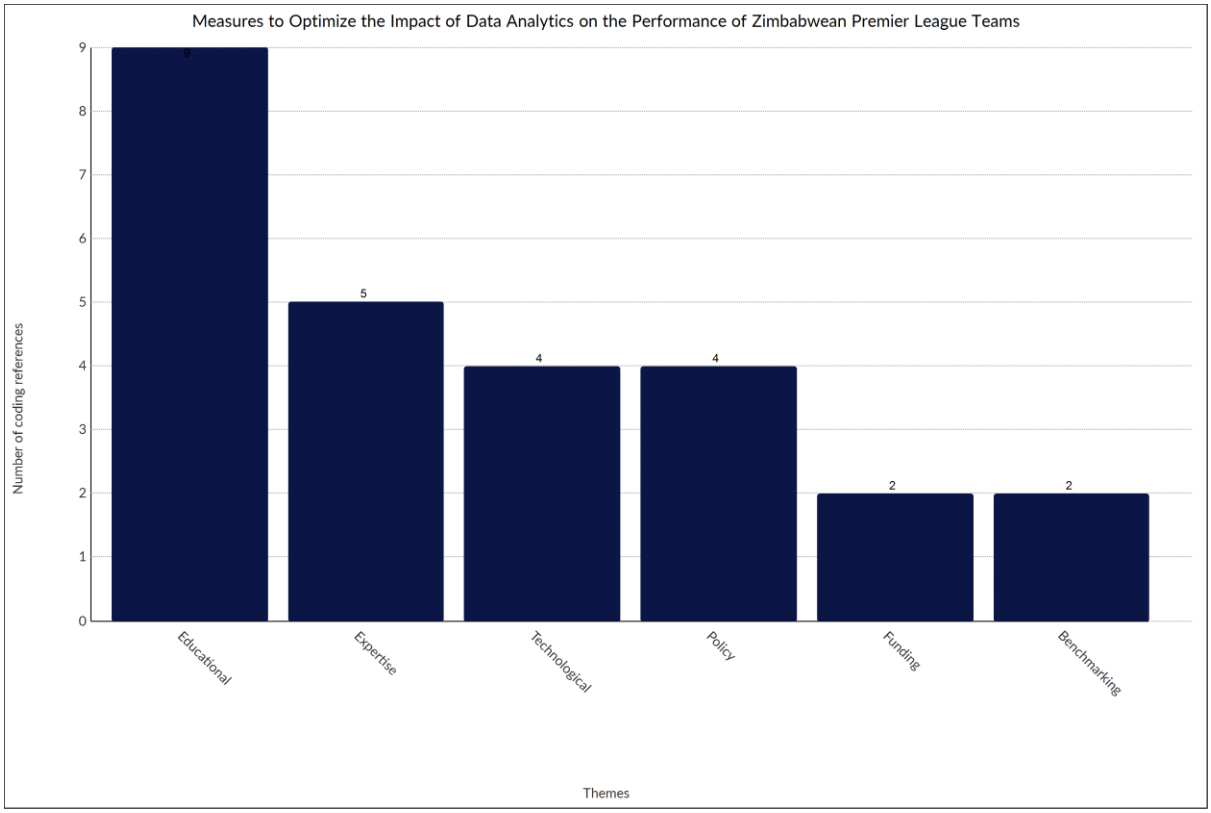
The mean scores which were recorded for the variables under consideration were greater than the Test Value (3.0) indicating that data analytics had a significant impact on them in Zimbabwean Premier Soccer League teams.

In the qualitative strand of the study, interviews were also used to determine the Impact of the Current Level of Application of Data Analytics on Talent Identification and Scouting. The NVivo 14 software was used to perform a word frequency query on the resultant data as presented in Figure 4.7.

Figure 4.11

Measures to Optimize the Impact of Data Analytics on the Performance of Zimbabwean Premier League Teams

The respondents were requested to point out the measures that can be put in place by the Zimbabwe Premier Soccer League teams to optimize the use of data analytics to enhance the Performance of teams. Their responses were structured into themes by application of the NVivo 12 software as abridged in Figure 4.10



The thematic analysis results presented in Figure 4.10 show bulk of the responses recommended educational measures nine (9) coding references. Other recommended measures included 'Expertise' five (5) coding references; Technological measures four (4) coding references and policy four (4) coding references. Funding two (2) and benchmarking five (5) coding references.

4.6 Chapter Summary

The chapter explored the analysis and presentation of data. Quantitative data was analysed with the application of SPSS V21 and qualitative data was analysed with use of Nvivo 12. The demographic data was analysed and presented as well as data related to the research objectives. The data was presented in pie charts, tables and bar graphs generated from SPSS Version 21 whilst qualitative data was analysed using Nvivo 14 software. The subsequent chapter deliberates on the findings and depicts a summary of the research findings, the new discernments developing from the study and the limitations of the study.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The previous chapter publicized the findings of the study based on the interview and questionnaires with selected research participants. This chapter comprehensively scrutinised the findings by combining quantitative and qualitative data sets in a way that gives a clearer image than using only one. The chapter places the preceding chapter's findings into context, mainly depending on the qualitative strand and validates the connection between this study and the literature discussed in the literature review section. This chapter also offers the requisite adaptive engagement structure to help the adoption of sports data analytics by the Zimbabwe Premier Soccer League Teams in Zimbabwe. This chapter focuses on the summary, conclusions and recommendations. The conclusions will address the four research questions outlined in Chapter One. Recommendations for practice and further study are also suggested in this chapter.

5.2 Summary of Major Findings

The study wanted to find out if the Zimbabwe Premier Soccer League teams are adopting the use of sports data analytics to enhance the performance of teams and individual players. The literature reviewed that in Zimbabwe there are no regulations or policies that aim to promote the use of sports data technology in the Premier Soccer League. The sources of Secondary data were textbooks, journals and the internet. The concurrent mixed method research design was used in the study and questionnaires and interviews were used as data collection methods. The data was presented in the form of tables, charts and pie charts.

The researcher deduced that the Zimbabwe Premier Soccer League teams are not using sports data analytics to enhance the performance of their teams and athletes. The non-use of sports data analytics is affecting the teams in the following facets; talent identification and scouting is being done without the use of sports data analytics thus unworthy athletes are being fed into the elite football stream. ZPSL teams are not involving the use of sports data analytics in injury prevention and management which is a high risk to the well-being of football players. Decision-making and evaluation are key areas that need sports data analytics, most managers and coaches are not able to make data-informed decisions which may bring incorrect assessments. Performance evaluation is also very special and the ZPSL teams are making evaluations based on gut feelings. The assessment of players' physical fitness and mental

fitness is being done without the use of sports data analytics thus posing a great challenge to team performance by teams in the Zimbabwe Premier Soccer League. The study recommends that the Zimbabwe Premier Soccer League teams should adopt sports data analytics to enhance the performance of their athletes and teams.

5.3 Conclusions

The research explored that the football clubs in the Zimbabwe Premier Soccer League are not using sports data analytics hence most of them are still using traditional ways of measuring the performance of teams or players which is detrimental to the overall standard of football in the country. This has been exhibited by the lack of podium performance whenever local footballers are selected to represent the country at regional and international level, their standards are always below par thus being contributed by the lack of data analytics in decision-making and performance evaluation. It can be concluded that the non-use of sports data analytics has contributed to the poor performance of teams and players in the ZPSL whenever they go for trials at international teams or whenever they go to compete in regional competitions.

5.3.1 To determine the current levels of application of data analytics by Zimbabwean Premier Football League teams.

The study revealed that the football teams in the Zimbabwe Premier Soccer League are not applying sports data analytics to enhance the performance of their teams. This was discovered when interviews were done with coaches involved in the ZPSL teams as well as managers in the same league who professed ignorance of the use of sports data analytics. Most of the reasons mentioned pointed out that most teams do not have the education concerning the use of sports data analytics and some of the teams confessed to have no funding towards sports technology. The questionnaires also posed questions enquiring on the use of sports data analytics in the Zimbabwe Premier Soccer League and the respondents declared ignorance on the sports data analytics subject. Therefore the level of application is very poor and this is also another pointer why the domestic football league is lowly rated.

5.3.2 To identify the factors that have shaped the current levels of adoption of data analytics by Zimbabwe Premier Soccer League teams.

There are a number of factors that have attributed to the current levels of adoption of sports data analytics by teams in the Zimbabwe Premier Soccer League. The main factor is the lack of funding and this was revealed by the respondents when the interviews were held, most of the teams in the ZPSL do not have the required funding for acquiring the sports technology set of data analytics. The unavailability of a policy to stipulate the requirement also contributes to the teams not being concerned about sports data analytics. The skill sets required for one to be a data analyst are also rare in Zimbabwe and this is revealed from the questionnaires on the highest qualification of technical persons in teams that are in the ZPSL where it was divulged that there is none qualified to do so.

5.3.3 To measure the impact of the current levels of adoption of data analytics by Zimbabwean Premier Soccer League teams have on team performance?

An extensive adverse impact has been suffered throughout the teams in the Zimbabwe Premier Soccer League because of the non-adoption of the data analytics technology by teams in the ZPSL. The process begins with Talent Identification and Scouting where the detection of talent, selection of talent and development of talent are all done using the wrong criteria thus compromising the whole process of scouting for talent. Inappropriate football players are selected at the expense of the suitable ones and team performance cannot be at the highest standard under such situations. Injury detection and management is also not being done using sports data analytics, there is no detection of proneness to injuries and the rehabilitation of injuries does not use any sports data thus compromising the healing process of injured football players. The tactical, technical, physical and psychological evaluation of players' performance is currently being done without the use of sports data analytics hence false assessments are done by coaches putting them in a precarious position to make bad decisions. Wrong tactics and techniques are taught and used by the coaches and this also affects the cognitive ability levels of football players which subject them to minnows when they go out to compete at the regional and international levels.

5.3.4 To provide intervention actions on how data analytics can be used to enhance the performance of Zimbabwe Premier Soccer League teams.

Various intervention levels can be used to enhance the performance of Zimbabwe Premier Soccer League teams. The National Sport Association which is the Zimbabwe Football Association (ZIFA) can come up with a policy to compel all Premier Soccer League teams to

employ Data Analysts who will be responsible for putting into effect the sports technology which may enhance the performance of all teams in the league. The Government of Zimbabwe may as well invest in sports by advancing loans or funding all the teams in the ZPSL to acquire data technology software and hardware so that they may implement the use of it in the league. The Government of Zimbabwe may also facilitate exchange programmes with other developed countries on the way soccer is managed in the modern era and this is set to benefit the local Premier League teams in learning the importance of using sports data analytics in enhancing performance. The national football governing body may also carry out Workshops, Webinars, Seminars and Educational campaigns in a bid to teach all the team coaches and managers the benefits of using sports data analytics in enhancing player and team performance.

By applying the use of sports data analytics, the teams in the Zimbabwe Premier Soccer League can earnestly benefit a lot and the result will be enhanced performance by players, coaches, managers and teams who would uplift the standard of football in Zimbabwe's elite league.

5.4 Limitations of the Study

The researcher faced some hitches during the study; there was no sponsorship to carry out the study hence the researcher had to self-fund himself to see the success of the research. It was a difficult task to extract data from the respondents since all the questionnaires and interviews were physically done thus there was a lot of travelling involved and a substantial amount of money was used on transport. Some of the coaches were unwilling to give out information because they were uncertain about the confidentiality of their disclosure; however, the researcher guaranteed confidentiality to the respondent's information by the insertion of a non-disclosure clause in the interviews and questionnaire.

The researcher explained to the respondents the usefulness of the data and how it was going to transform the sport of football as a whole in the Zimbabwe Premier Soccer League by empowering the coaches and managers to be able to enhance team performance. The sample size was more than half of the teams' population hence the football population in the Premier Soccer League was well represented. This assisted in making sure that the researcher will get a wholesome picture of what is transpiring in the Zimbabwe Premier Soccer League at large. Accessibility of the coaches was very difficult since most of them were busy throughout the week and a lot of patience had to be exercised to locate the respondents at their spare time. In

Zimbabwe there is very little literature pertaining to sports data analytics hence the researcher had to depend on information from Google Books and Google Scholar on the internet.

5. 5 Implications/Recommendations

The researcher does make the following recommendations founded on the conclusions made earlier on.

5.5.1 Implications for Practice

The Zimbabwe Premier Soccer League and the Zimbabwe Football Association have to come up with a policy that will be enforceable and make it mandatory for all teams to employ sports data analysts who will help the teams in analysing sports data thus the overall performance of football teams will be enhanced. Talent Identification and Scouting programmes for football players should be done with the use of sports data analysis and this will help the teams to groom the right candidate who will bring potential benefits in the future of the club and the country. It also should be a custom that all football players be equipped with knowledge on what entails sports data analysis, its use, benefit and how it may impact on their value as a players on the football market.

5.5.2 Implications for Theory

The findings from this study can be added to the miniature literature base available in Zimbabwe; this would be help educate football coaches, managers as well as players in the Zimbabwe Premier Soccer League. Most Zimbabwean players in the ZPSL have suffered gruesome injuries due to a lack of data technology in detecting and managing injuries, most of them never made it again and their illustrious careers ended pitifully. No matter how good a form a football team is enjoying, the performance will not be the same with a team that is making good use of sports data analytics.

5.5.3 Implications for Future Research

In future the same topic will be studied and now focus on the specific data analytic technology to use for the teams in the Zimbabwe Premier Soccer League. The recruitment of data analysts, the content they need to know and the actual data technology to use, its importance and benefits as an elite football league. The researcher will also need to measure the impact of data analytics on a team's performance before and after implementing the technology. All intervening strategies will be studied in length and the period within which sports data analytics benefits begin to be enjoyed. The motive of doing this would be to

ensure that the strategies that were recommended work and support the coaches and players to understand how useful data analytics is in enhancing the performance of teams.

5.6 Chapter Summary

In this chapter, the researcher explained the limitations he faced during the study and how he managed to minimise them. Also, the recommendations were made on how the findings from the research would be used in real practice, theory and future study giving the reason for every implication.

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APPENDIX 1

QUESTIONNAIRE

Introduction

My name is Oliver Chokhotho and I am a student at Bindura University of Science Education pursuing an Honours Degree in Sports Science and Management (HBScSSM). I am researching using sports data analytics to enhance the performance of the Zimbabwe Premier Soccer League (ZPSL) teams. The research seeks to develop interventions that can optimise the use of data analytics by football clubs affiliated with The Zimbabwe Premier Soccer League teams. Your participation in this questionnaire is vital for the success of this research. I am kindly inviting you to help by responding to this questionnaire. The responses you will give will be organized in such a way that neither your name nor your organization will be identified. Participation in this survey is voluntary.

Instructions:

1. Kindly read and comprehend the information in all sections.
2. Kindly be as truthful as possible when giving your responses.
3. For enquires please don't waste time I will be at your disposal.
4. Tick in the correct box.
5. Do not write your name on this questionnaire.

1, Gender

Male		Female	

2. Age

Below 20		21-30		31-40		41-50		51-60		Over 60	

3. Highest Academic qualifications

No formal Education	
Primary	
Secondary	
Certificate	
Diploma	
Graduate	
Postgraduate	

4. Marital Status

Single		Married		Divorced		Widowed	

5. How long have you participated in competitive football?

Less than 1 year		1-5 years		5-10 Years		More than 10 years	

6. Please indicate the extent to which you agree with the following statements by ticking the appropriate box

Statement	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
My club is currently using data analytics for its talent identification and scouting programmes.					
My club is currently using data analytics as an injury prevention and management tool.					
My club is currently using data analytics as a tactical planning and decision-making tool.					
My club is currently using data analytics as a technical performance evaluation tool.					
My club is currently using data analytics to evaluate the physical fitness levels of athletes.					
My club is currently using data analytics to evaluate					

the mental fitness levels of athletes.					
The current level of adoption of data analytics by Zimbabwean Premier Soccer League teams is influenced by the availability of technological infrastructure.					
The current level of adoption of data analytics by Zimbabwean Premier Soccer League teams is influenced by the availability of financial resources.					
The current level of adoption of data analytics by Zimbabwean Premier Soccer League teams is influenced by the data analytics expertise levels of the technical staff.					
The current level of adoption of data analytics by Zimbabwean Premier Soccer League teams is influenced by resistance to change among the key decision-makers in the teams.					
The pursuit of competitive advantage is a key driver for the adoption of data analytics by Zimbabwean Premier Soccer League teams.					
Collaboration and knowledge sharing within the football community have influenced the adoption of data analytics by Zimbabwean Premier Soccer League teams.					
Data analytics plays a pivotal role in minimizing injury risks in Zimbabwean Premier Soccer League teams.					
Data analytics has improved the talent identification outcomes in Zimbabwean Premier Soccer League teams.					
Data analytics has improved the tactical performance of Zimbabwean Premier Soccer League teams.					
Data analytics has improved the technical performance of Zimbabwean Premier Soccer League teams.					
Data analytics has improved the psychological performance of Zimbabwean Premier Soccer League teams.					
Data analytics has improved the fitness levels of Zimbabwean Premier Soccer League teams.					

7. What measures can be adopted to optimize the impact of data analytics by the Zimbabwe Premier Soccer League teams in Zimbabwe?

……
……
……
……
……
……

THANK YOU

APPENDIX 2

INTERVIEW GUIDE

INTRODUCTION

My name is Oliver Chokhotho; I am a student at Bindura University of Science Education pursuing an Honours Degree in Sports Science and Management (HBScSSM). I am researching using sports data analytics to enhance the performance of the Zimbabwe Premier Soccer League (ZPSL) teams. The research seeks to develop interventions that can optimise the use of data analytics by football clubs affiliated with The Zimbabwe Premier Soccer League teams. Your participation in this interview is vital for the success of this research. I am kindly inviting you to participate in the interview. Your responses will be kept confidential and will only be used for academic purposes. Participation in this study is voluntary.

INSTRUCTIONS

Some codes will be used to categorise each participant. During the interviews, you are not permitted to recognise yourselves by name, by position held or by your organization. When taking part in the data extraction, do not use personal information or examples that can identify you and other people present here or those who are not part of the discussion. The discussions will be recorded and copied later.

QUESTIONS

1. Describe the extent to which Zimbabwean Premier Soccer League teams are using data analytics for injury management, talent identification, scouting, tactical decision-making, technical performance evaluation and fitness assessment tools?

2. What factors have shaped the current levels of adoption of data analytics by Zimbabwean Premier League Football teams?

3. What impact have the current levels of adoption of data analytics by Zimbabwean Premier League Football teams had on talent identification and scouting outcomes?

4. What impact have the current levels of adoption of data analytics by Zimbabwean Premier League Football teams had in minimizing the risk of injuries?

5. What impact have the current levels of adoption of data analytics by Zimbabwean Premier League Football teams had on their tactical performance?

6. What impact have the current levels of adoption of data analytics by Zimbabwean Premier League Football teams had on the technical performance of athletes?

7. What impact have the current levels of adoption of data analytics by Zimbabwean Premier League Football teams had on the fitness levels of athletes?

8. What impact have the current levels of adoption of data analytics by Zimbabwean Premier League Football teams had on the psychological performance of athletes?

9. What measures can be adopted to optimize the impact of data analytics by the Zimbabwe Premier Soccer League teams in Zimbabwe?

APPENDIX 3

INFORMED CONSENT FORM

Informed Consent Form

Title of Project: Using sports data analytics to enhance the performance of the Zimbabwe Premier Soccer League teams.

Principal Investigator: Oliver Chokhotho

Participant Information

1. I have read the Participant Information Sheet and had the opportunity to ask the researcher any questions.

2. I understand that participation in this research study is entirely voluntary.

3. I am aware that I can refuse consent and withdraw from the study at any time without any implications.

4. I understand that my participation will be kept confidential and my anonymity will be maintained.

5. I acknowledge that the purpose of this research study is to come up with psychological task coaching to enhance concentration in primary school netball players in Harare.

6. I understand that my participation will involve attending training sessions, practising concentration techniques, and potentially incorporating them into regular training sessions.

7. I am aware that there may be risks associated with participating in this study, such as potential discomfort or inconvenience during training sessions.

8. I understand that the data collected during this study will be used for research purposes only and may be published or presented in academic forums.

By signing below, I confirm that I have read and understood the information provided above and voluntarily agree to participate in this research study.

Participant's Signature: _____

Date: 10 July 2024

APPENDIX 4

CONFIDENTIALITY AGREEMENT

This Confidentiality Agreement is entered into by and between [Oliver Chokhotho] ("Researcher") and [……] ("Participant") (collectively referred to as the "Parties") on this [10 July 2024].

1. Purpose

The purpose of this Agreement is to protect the confidentiality of any information shared between the Researcher and the Participant during the research study titled "Using Sports Data Analytics to enhance the Performance of the Zimbabwe Premier Soccer League teams.

2. Confidential Information

Confidential Information refers to any data, documents, or materials related to the Study that is not publicly available. This includes, but is not limited to, research findings, participant data, research methodologies, and any other information shared between the Parties.

3. Obligations

3.1 The Researcher agrees to:

- Maintain the confidentiality of all Confidential Information received from the Participant.

- Use the Confidential Information solely to conduct the study.

- Not disclose or share the Confidential Information with any third party without prior written consent from the Participant.

3.2 The Participant agrees to:

- Provide accurate and truthful information to the Researcher.

- Treat any information shared by the Researcher as confidential.

- Not disclose or share any Confidential Information received from the Researcher with any third party without prior written consent.

4. Duration

This Agreement shall remain in effect for the duration of the Study and a period of [12 months] thereafter.

By signing below, both Parties acknowledge that they have read and understood this Agreement and agree to be bound by its terms.

Researcher:

[Oliver Chokhotho]

[**Date**…10 July 2024]

Participant:

[…….]

[…….]

[**Date**…10 July 2024]

APPENDIX 5

ACCESS AND PERMISSION LETTERS

BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF SCIENCE AND ENGINEERING

P. Bag 1020
BINDURA, Zimbabwe Tel: +263662106134/0772916712 info@buse.ac.zw
DEPARTMENT OF SPORTS SCIENCE

TO WHOM IT MAY CONCERN.

RE: UNDERGRADUATE DISSERTATION STUDY ACCESS REQUEST.

This is to certify that Oliver Chokhotho is a bonafide Bachelor of Science in Sports Science and Management student in the Department of Sports Science at the Bindura University of Science Education. He is conducting an action research study entitled:

'Using sports data analytics to enhance the performance of the Zimbabwe Premier Soccer League teams.

We are kindly requesting your organization to partner with her/him in the study by participating in the data collection and intervention strategy development process.

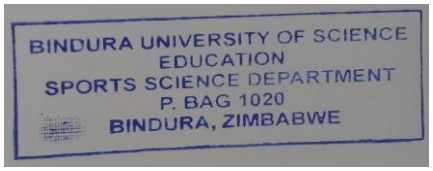
Participation in this study is deliberate and you may choose to withdraw from the research at any time. The information from your organization will only be used for academic resolves and be kept private and confidential. Some codes will be used in the identification of a participant organization. This was done to make sure that information would not be connected to the providers. Password-protected computers will be put into use to store any identifiable information that may be acquired from your organization. Data will also be scrutinized at the group level, to ensure privacy. You can also sign concealment agreements with the researcher.

A copy of the finished work will be delivered to your organization after the study. The results of the study are expected to change practice and your support will be vital to its success.

If you have any queries regarding this project, please phone me on 0772916712, or lysiastapiwacharumbira1968@gmail.com or lcharumbira@buse.ac.zw

We would like to thank you in advance for your support.

Yours Sincerely



Lysias Tapiwanashe Charumbira (Dr.)

Chairperson