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RESEARCH ARTICLE

Offensive Performance Indicators: A Comparative Study of Winning, Drawing, and Losing Teams in the 2023 Malaysia Super League

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Abstract
This study aimed to identify significant differences in offensive performance metrics among winning, drawing, and losing teams in the 2023 Malaysia Super League (MSL) season. Data were collected from 91 matches during the MSL football league using the InStat® system. The analysed variables included set pieces, corners, free kicks, penalties, and shooting. The results showed that winning teams had discriminative offensive performance indicators such as set pieces with shots (4.48±2.17), % set pieces with shots (17.10±8.58), corners (5.90±3.16), corners with shots (2.05±1.63), % corners with shots (36.56±27.49), free kicks with shots (0.76±0.89), % free kicks with shots (22.02±27.49), penalties (0.30±0.58), penalties converted (0.26±0.52), % penalties converted (21.11±40.35), shots (16.53±6.08), shots on target (6.97±3.35), % shots on target (42.18±13.58), shots from outside the penalty area (7.16±3.41), shots from outside the penalty area on target (2.20±1.65), and % shots from outside the penalty area on target (30.68±21.07). In contrast, drawing teams had higher mean values in set pieces (28.67±5.87) and free kicks (4.34±2.21). In conclusion, these findings have practical implications for coaches in planning and implementing offensive tactics for successful performance. Future research could explore the impact of different tactical approaches and formations on match outcomes and analyse the effectiveness of in-match tactical adjustments.

Keywords
Malaysia, Offensive, Game-Related Statistics, Football, Performance

INTRODUCTION

In recent decades, the field of game analysis has progressively concentrated on the identification and quantification of functional information that optimally enhances both individual athlete and overall team performance (Castellano & Pic, 2019; Glazier, 2010; James, 2006). Performance indicators, which are a set of factors selected and combined to highlight specific aspects of performance, play a crucial role in achieving success in athletics (Lago-Peñas & Lago-Ballesteros, 2011). In contemporary sports, the use of statistical and machine learning models in football game analysis is growing, aiding researchers and practitioners in gaining a deeper understanding of game performance and its key influencing events (e.g., goals, scoring, fouls, etc.), thus altering the pathway to success (Liu et al., 2021).

These indicators provide critical insights into the tactical and technical demands characteristic of contemporary sports (Cullinane et al., 2024). For assessing physical abilities, key indicators include various kinematic data such as total distance traveled, distance covered at different speeds, and accelerations/decelerations (Rohyana & Adawiyah, 2018; Modric et al., 2021; De Albuquerque Freire et

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al., 2022; Phytanza et al., 2023). Evaluating tactical skills often involves measuring the coordination between players, team coordination before crucial events, and the interaction and cohesion between teams, typically using compactness coefficients (Memmert et al., 2017).

Professional soccer coaches prepare their players to execute a distinct style of play, strategically tailored to counter the specific tactics of their opponents in each match. A style of play is defined as the collective behavior of a team, oriented towards accomplishing offensive and defensive objectives within the game (Fernandez-Navarro et al., 2016). This approach encompasses the movement of players and the ball, player interactions, and considerations of speed, time, and spatial dynamics (Hewitt et al., 2016). Notably, match status plays a substantial role in shaping a team's style of play (Paixao et al., 2015; Fernandez-Navarro et al., 2018); This strategic behavior has been highlighted in various studies, including Lago and Martín (2007), who found that trailing teams increase their offensive play, and Bloomfield et al., (2005), who noted that leading teams frequently adopt defensive measures to secure their position

A comprehensive understanding of how contextual variables impact offensive performance in soccer is essential for coaches seeking to refine their teams' tactical strategies and optimize preparations for competitive play. Recent studies have shown that factors such as match location, team ranking, and opposition quality significantly influence a team's attacking style during matches. For instance, González-Rodenas et al., (2021) highlight that these variables impact not only the type of offensive plays employed but also their effectiveness. Teams often adjust between combinative, direct, fast, or counterattacking styles depending on these situational contexts

Furthermore, Lago-Ballesteros and Lago-Peñas (2022) explore how a team's adaptation to these contextual variables can define their tactical behavior throughout a season. By analyzing patterns of attack and defense across various contexts, teams can better identify which strategies are most effective in particular match situations. This approach can provide a foundation for tactical adaptability, allowing teams to respond dynamically to changes in game scenarios.

Despite limited research on the tactical patterns of offensive play in football teams across both individual matches and entire seasons (Gómez et al., 2018; Wang et al., 2015), existing studies have identified diverse attacking strategies employed at various points within and across games. These investigations revealed that certain offensive patterns were more prevalent than others; however, they predominantly focused on passing behaviors without integrating additional variables. Moreover, analyses were limited to single teams per match, overlooking interactions with opponents.

To ascertain the factors contributing to success in football, it is essential to develop performance metrics that distinguish victorious teams from their counterparts (Lepschy et al., 2018). Research consistently highlights that technical attributes significantly differentiate winning from losing teams (Lago-Peñas et al., 2010; Castellano et al., 2012; Zhou et al., 2018). For instance, Das et al., (2022), examining the 2019-2020 and 2020-2021 seasons of the Hero Indian Super League (ISL), identified key indicators such as shots on target, crosses, red cards, and corner kicks as critical success factors. Winning teams demonstrated higher frequencies of shots and shots on target compared to losing teams. Similarly, Kubayi and Toriola (2020) found that variables including goals scored, total shots, shots on target, fouls, offsides, yellow cards, and red cards were significant performance indicators associated with winning teams. In contrast, losing teams exhibited higher averages in total passes, accurate passes, corner kicks, and ball possession.

Further, González-Ródenas et al., (2021) established that winning teams were more likely to utilize counterattacks and direct attacks, rather than combinative play. The study also indicated that during the second half, teams favored counterattacks as a progression method over combinative attacks. Mohamad Zaki et al., (2014), examining goal-related, offense-related, and defense-related variables across eight randomly selected games from the 2012 season, reported a notable distinction in shots on goal between winning and losing teams, reinforcing the critical role of offensive actions in determining match outcomes.

Analyzing attacking indicators like shot locations, counterattacks, and penalty box entries is crucial for understanding football dynamics and improving team performance. Recent studies indicate that counterattacks significantly enhance scoring opportunities by exploiting defensive imbalances, especially compared to slower, positional plays. For example, González-Rodenas et

al., (2021) and Liu et al., (2023) show that successful teams utilize rapid transitions and accurate shot placement, which are key differentiators in high-level matches. Nevertheless, comprehensive studies that integrate these indicators to differentiate between winning, drawing, and losing outcomes in the MSL remain scarce. Existing research often focuses on isolated metrics without considering the interplay between different attacking actions and their contextual importance (Castellano et al., 2012). This gap in the literature underscores the need for a holistic approach to analysing attacking performance. Therefore, this research aims to uncover significant differences in offensive performance metrics among winning, drawing, and losing teams in the 2023 Malaysia Super League season. By examining set pieces, corners, free kicks, penalties, shooting, passing, attacks, penalty area actions, and their correlation with match outcomes, we seek to deepen the understanding of offensive tactics in the MSL. This insight can enable coaches, players, commentators, and fans to appreciate the nuances of offensive play and its impact on success in the league.

MATERIALS AND METHODS

In this study, we examined offensive performance indicators of teams in the 2023 Malaysia Super League (MSL) season to identify differences among winning, drawing, and losing teams.

Research Design

The research followed a structured approach using both descriptive and inferential statistical analyses to assess offensive indicators across different match outcomes. The process began with data collection and proceeded through descriptive statistics and normality tests (Nuggraha et al., 2024). A one-way repeated measures ANOVA was conducted to analyze significant differences among groups, with Tukey's HSD post-hoc tests administered as applicable (Pa et al., 2024).Below Figure 1 is a simplified flowchart of the research design:

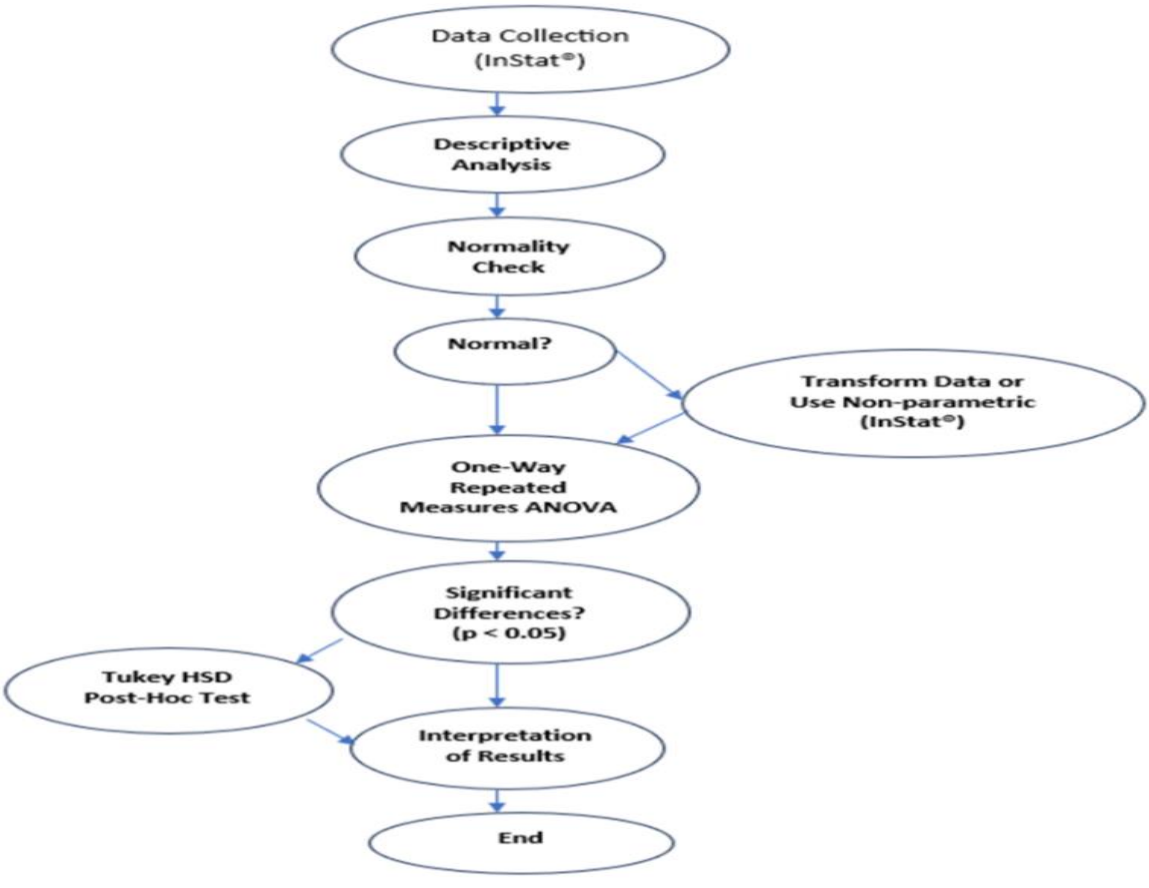

Figure 1. Research flowchart

Participants

The study analyzed data from 14 teams that participated in the 2023 MSL season, encompassing a total of 91 matches. These teams represented diverse competitive levels within the league, offering a broad view of performance metrics across various match outcomes. This sample provides insight into the range of offensive capabilities and strategies employed in the MSL.

Ethical Statement

The research was conducted in strict adherence to ethical standards, prioritizing the safety and welfare of all participants throughout the study's design and implementation phases. Measures were diligently taken to ensure data confidentiality. Authorization to conduct this research was granted by the Ministry of Education, Culture, Research, and Technology, Universitas Pendidikan Indonesia (reference number: 1329/UN40.A6/KP/2024). Informed written consent was obtained from all participants, who were provided with a consent form detailing the study's procedures, potential risks and benefits, data confidentiality protocols, and their rights as participants.

Instruments

Performance data were gathered using InStat®, a globally recognized platform that provides comprehensive analytics on physical, technical, and tactical aspects of team sports (Nazarudin et al., 2024). This platform was selected due to its reliability and extensive use among professional teams in sports such as football, basketball, and handball (Kubayi & Toriola, 2020; Abdul Rahim et al., 2023). In total, 18 technical indicators were analyzed, focusing on set pieces, corners, free kicks, penalties, and shooting. InStat® ensures data consistency and accuracy, which is crucial for performance evaluation at this level.

Procedures

Data collection involved several key steps. Offensive performance metrics for each match were retrieved from the InStat® system. The selected indicators were categorized under set pieces, corners, free kicks, penalties, and shooting to facilitate a focused analysis of offensive actions. Basic descriptive statistics were calculated for all indicators to establish a general overview of offensive performance across the sample matches. The normality of the data was assessed to confirm the appropriateness of conducting parametric tests. This step was essential to ensure the reliability of the subsequent inferential analyses. To assess significant differences among winning, drawing, and losing teams, a one-way repeated measures ANOVA was conducted using SPSS Version 28. For instances where p-values fell below the 0.05 significance threshold, Tukey HSD post-hoc tests were employed to identify and analyze specific inter-group differences.

Data Analysis

The data analysis phase of this study underscores the critical role of offensive performance indicators in differentiating between winning, drawing, and losing teams. Descriptive statistics offered a snapshot of metrics like set pieces and shooting accuracy, revealing how these factors contribute to scoring opportunities. Inferential analysis using one-way ANOVA showed that the percentage of set pieces resulting in shots significantly differed among match outcomes, with winning teams exhibiting greater efficiency (Husain et al., 2022; Tan & Wang, 2024). These findings underscore that successful teams not only create more offensive opportunities but also execute them with precision, which is critical for achieving favorable results (Wright & Hirotsu, 2023).

RESULTS

Set-Piece

Table 1 indicates that the One-Way ANOVA revealed significant differences between match outcomes in several set piece indicators, namely in set pieces ($F_{2,361} = 3.336$, $p < .037$, $\eta^2 = 0.018$), set pieces with shots ($F_{2,361} = 13.75$, $p < .000$, $\eta^2 = 0.071$) and % set pieces with shots ($F_{2,361} = 21.23$, $p < .000$, $\eta^2 = 0.105$). The mean number of set pieces shows a statistically significant variation across the three groups (winning, drawing, and losing teams), evidenced by a p-value of 0.037, which is below the 0.05 threshold for significance. The eta-squared value of 0.018 indicates a small effect size. Among the groups, drawing teams exhibit a slightly higher mean for set pieces compared to both winning and losing teams. Furthermore, the mean number of set pieces leading to shots differs significantly among the three groups, with a p-value of 0.000, well below the 0.05 level, indicating a highly significant difference.

Table 1. Differences between winning, drawing, and losing for a set piece

Indicator	Win		Draw		Lose		F (2,361)	Sig.	Eta-squared (η2)
	Mean	SD	Mean	SD	Mean	SD			
Set pieces	26.780	5.608	28.672	5.874	28.053	5.320	3.336	0.037	0.018
Set pieces with shots	4.480	2.173	3.906	2.060	3.153	2.270	13.750	0.000	0.071
% Set pieces with shots	17.107	8.586	13.622	6.482	11.176	7.735	21.230	0.000	0.105

The eta-squared value of 0.071 suggests a moderate effect size, and winning teams have a significantly higher mean value for set pieces with shots compared to drawing and losing teams. Additionally, the mean percentage of set pieces resulting in shots significantly differs across the three groups, with a p-value of 0.000, underscoring a highly significant variation. The eta-squared value of 0.105 suggests a moderate to large effect size, with winning teams displaying a notably higher mean percentage of set pieces leading to shots compared to drawing and losing teams.

Corners

Table 2 reveals that the One-Way ANOVA showed significant differences between match outcomes in several set-piece indicators: corners ($F_{2,361} = 16.262$, $p < .000$, $\eta 2 = 0.083$), corners with shots ($F_{2,361} = 15.148$, $p < .000$, $\eta 2 = 0.077$), and percentage of corners with shots ($F_{2,361} = 3.744$, $p < .025$, $\eta 2 = 0.02$).

Table 2. Differences between winning, drawing, and losing for corners

Indicator	Win		Draw		Lose		F (2,361)	Sig.	Eta-squared (η2)
	Mean	SD	Mean	SD	Mean	SD			
Corners	5.900	3.164	4.594	2.832	3.953	2.865	16.262	0.000	0.083
Corners with shots	2.053	1.633	1.516	1.309	1.140	1.280	15.148	0.000	0.077
% Corners with shots	36.562	27.499	29.738	24.344	28.161	28.694	3.744	0.025	0.020

The analysis reveals a statistically significant difference in the mean number of corners among winning, drawing, and losing teams, as evidenced by a p-value of 0.000, indicating a highly significant distinction. The eta-squared value of 0.083 denotes a moderate effect size, with winning teams exhibiting a significantly higher mean number of corners compared to drawing and losing teams, suggesting that winning teams tend to secure more corners during matches.

Similarly, the mean number of corners that lead to shots significantly differs among the three groups, with a p-value of 0.000, underscoring a highly significant difference. The eta-squared value of 0.077 indicates a moderate effect size, with winning teams achieving a markedly higher mean in corners resulting in shots, thereby demonstrating greater effectiveness in converting corner kicks into scoring opportunities. Furthermore, a significant difference is observed in the mean percentage of corners resulting in shots across winning, drawing, and losing teams, with a p-value of 0.025, indicating a statistically significant variation.

The eta-squared value of 0.020 suggests a small effect size for this variable. Although the difference here is less pronounced than for previous indicators, winning teams still display a higher mean percentage of corners that result in shots, in comparison to both drawing and losing teams.

Free Kicks

Table 3 shows significant differences among winning, drawing, and losing teams for the number of free kicks, with drawing teams having the highest mean (4.344) compared to winning (3.407) and losing (3.720) teams ($F(2,361) = 4.057$, $p = 0.018$, $\eta^2 = 0.022$). However, there are no significant differences in the mean number of free kicks resulting in shots ($F(2,361) = 0.060$, $p = 0.942$, $\eta^2 = 0.000$) or the percentage of free kicks resulting in shots ($F(2,361) = 1.024$, $p = 0.360$, $\eta^2 = 0.006$), indicating similar efficiency in converting free kicks into shots across all teams.

The mean number of free kicks is significantly different among winning, drawing, and losing teams, with a p-value of 0.018, which is less than 0.05, indicating a significant difference. The eta-squared value of 0.022 suggests a small effect size. Drawing teams have a significantly higher mean value for free kicks compared to winning and losing teams, indicating that drawing teams tend to earn more free kicks during matches. However, there is no significant difference in the mean number of free kicks resulting in shots among the three groups, as the p-value of 0.942 is greater than 0.05, indicating no significant difference. The eta-squared value of 0.000 suggests no effect size, meaning that all teams have a similar mean value for free kicks resulting in shots.

Additionally, there is no significant difference in the mean percentage of free kicks resulting in shots among the three groups, with a p-value of 0.360, which is greater than 0.05, indicating no significant difference. The eta-squared value of 0.006 suggests a very small effect size, indicating that the percentage of free kicks resulting in shots is similar across all teams.

Table 3. Differences between winning, drawing, and losing for free kicks

Indicator	Win		Draw		Lose		F (2,361)	Sig.	Eta-squared (η2)
	Mean	SD	Mean	SD	Mean	SD			
Free kicks	3.407	2.208	4.344	2.213	3.720	2.202	4.057	0.018	0.022
Free kicks with shots	0.767	0.893	0.766	0.886	0.733	0.910	0.060	0.942	0.000
% Free kicks with shots	22.022	27.497	17.892	23.698	18.371	22.823	1.024	0.360	0.006

Penalties

Table 4 shows that the One-Way ANOVA revealed significant differences between match outcomes in several set-piece indicators: penalties ($F_{2,361} = 6.371$, $p < .002$, $\eta 2 = 0.034$), penalties converted ($F_{2,361} = 7.181$, $p < .001$, $\eta 2 = 0.038$), and percentage of penalties converted ($F_{2,361} = 5.839$, $p < .003$, $\eta 2 = 0.031$).

Table 4. Differences between winning, drawing, and losing for penalty

Indicator	Win		Draw		Lose		F (2,361)	Sig.	Eta-squared (η2)
	Mean	SD	Mean	SD	Mean	SD			
Penalties	0.300	0.588	0.172	0.420	0.107	0.350	6.371	0.002	0.034
Penalties converted	0.260	0.524	0.125	0.333	0.087	0.282	7.181	0.001	0.038
% Penalties converted	21.111	40.350	11.719	31.801	8.000	26.597	5.839	0.003	0.031

The mean number of penalties significantly differs among winning, drawing, and losing teams, with a p-value of 0.002, which is less than 0.05, indicating a significant difference. The eta-squared value of 0.034 suggests a small to moderate effect size. Winning teams have a significantly higher mean value for penalties compared to drawing and losing teams, indicating that winning teams tend to earn more penalties during matches. Additionally, the mean number of penalties converted is significantly different among the three groups, with a p-value of 0.001, which is less than 0.05, indicating a significant difference. The eta-squared value of 0.038 suggests a small to moderate effect size, and winning teams have a significantly higher mean value for penalties converted compared to drawing and losing teams, highlighting their efficiency in converting penalties into goals.

Furthermore, the mean percentage of penalties converted significantly differs among winning, drawing, and losing teams, with a p-value of 0.003, which is less than 0.05, indicating a significant difference. The eta-squared value of 0.031 suggests a small to moderate effect size, and winning teams have a significantly higher mean percentage of penalties converted compared to drawing and losing teams.

Shooting

Table 5 shows that a One-way ANOVA revealed significant differences between match outcomes in several shot indicators: shots ($F_{2,361} = 63.333$, $p < .000$, $\eta 2 = 0.26$), shots on target ($F_{2,361} = 98.29$, $p < .000$, $\eta 2 = 0.353$), percentage of shots on target ($F_{2,361} = 24.754$, $p < .000$, $\eta 2 = 0.121$), shots from outside the penalty area ($F_{2,361} = 16.294$, $p < .000$, $\eta 2 = 0.083$), shots from outside the penalty area on target ($F_{2,361} = 19.74$, $p < .000$, $\eta 2 = 0.099$), and percentage of shots from outside the penalty area on target ($F_{2,361} = 3.562$, $p < .029$, $\eta 2 = 0.019$).

Table 5. Differences between winning, drawing, and losing for shooting

Indicator	Win		Draw		Lose		F (2,361)	Sig.	Eta-squared η2
	Mean	SD	Mean	SD	Mean	SD			
Shots	16.533	6.080	12.406	4.471	9.713	4.672	63.333	0.000	0.260
Shots on target	6.973	3.352	3.781	2.051	2.807	1.958	98.290	0.000	0.353
% Shots on target	42.186	13.589	31.506	15.755	29.465	18.775	24.754	0.000	0.121
Shots from outside penalty area	7.160	3.412	6.141	3.299	5.087	2.780	16.294	0.000	0.083
Shots from outside penalty area on target	2.207	1.656	1.531	1.391	1.193	1.121	19.740	0.000	0.099
% Shots from outside penalty area on target	30.681	21.073	26.481	25.774	23.698	22.972	3.562	0.029	0.019

The mean number of shots is significantly different among winning, drawing, and losing teams, with a p-value of 0.000 indicating a highly significant difference. The eta-squared value of 0.260 suggests a large effect size, showing that winning teams have a significantly higher mean value for shots compared to drawing and losing teams. This indicates that winning teams are more aggressive and generate more shooting opportunities. Similarly, the mean number of shots on target also differs significantly among the three groups, with a p-value of 0.000 indicating a very significant difference. The eta-squared value of 0.353 suggests a large effect size, highlighting that winning teams have a significantly higher mean value for shots on target compared to drawing and losing teams, emphasizing their superior accuracy and efficiency.

Additionally, the mean percentage of shots on target is significantly different among winning, drawing, and losing teams. The p-value of 0.000 is highly significant, and the eta-squared value of 0.121 suggests a moderate effect size. This indicates that winning teams have a higher mean percentage of shots on target, reflecting their better shot accuracy and conversion rate. The mean number of shots from outside the penalty area also shows significant differences among the three groups, with a p-value of 0.000 indicating a significant difference and an eta-squared value of 0.083 suggesting a moderate effect size. Winning teams have a higher mean value for shots from outside the penalty area, demonstrating their willingness to take long-range shots.

Furthermore, the mean percentage of shots from outside the penalty area on target is significantly different among the three groups, with a p-value of 0.029 indicating a significant difference. The eta-squared value of 0.019 suggests a small effect size, showing that winning teams have a higher mean percentage of shots from outside the penalty area on target, reflecting their accuracy in long-range shooting.

DISCUSSION

Set Piece

The observed significant difference in the number of set pieces among winning, drawing, and losing teams, with drawing teams demonstrating slightly higher mean values, highlights the strategic importance of set pieces in contemporary football. According to Lago-Peñas et al., (2018), set pieces account for a considerable proportion of goals in professional football, making them crucial for match strategy. However, the higher mean value for drawing teams suggests that merely earning set pieces does not guarantee success. Instead, the

effectiveness of these set pieces in creating scoring opportunities is more critical, as evidenced by the subsequent indicators.

Winning teams exhibit a significantly higher mean number of set pieces resulting in shots compared to drawing and losing teams. This finding aligns with Casal et al., (2019), who observed that successful teams demonstrate greater efficiency in converting set pieces into both shots and goals. The ability to capitalize on set pieces can be attributed to better execution, strategic positioning, and player skills, reflecting the importance of coaching and practice. Winning teams' superior performance in this area underscores the need for precision and effectiveness in set-piece situations, often a decisive factor in closely contested matches.

The percentage of set pieces resulting in shots further highlights the effectiveness of winning teams in utilizing set pieces. Winning teams' significantly higher mean percentage indicates that they are not only earning set pieces but also converting a substantial proportion into scoring opportunities. This efficiency can be linked to contemporary theories on game intelligence and decision-making. Memmert et al., (2019) discuss the role of tactical intelligence and decision-making in football, suggesting that players' ability to make quick, effective decisions during set pieces is crucial for success. The higher percentage for winning teams may reflect better decision-making and execution during these critical moments.

Research by Dios et al., (2017) highlights that set pieces account for a significant proportion of goals scored in professional football, underscoring their importance in determining match outcomes. As Maneiro et al., (2021) point out, successful teams have well-rehearsed set-piece routines that maximize scoring chances. Set pieces, including free kicks, corners, and throw-ins, are essential to football strategy, providing structured scoring opportunities and bypassing the complexities of open play.

Corner

Winning teams' higher mean number of corners suggests a more aggressive and attacking style of play. This finding is consistent with studies by Lago-Peñas et al., (2018), which emphasize the role of set pieces in creating scoring opportunities. Teams that earn more corners are likely to generate more chances to score, increasing their likelihood of winning matches. The higher mean number of corners resulting in shots for winning teams indicates their efficiency in set-piece execution. Casal et al., (2019) found that successful teams are more effective in converting set pieces into shots and goals. This efficiency reflects better preparation, strategic planning, and player skills, suggesting that winning teams have a tactical advantage in set-piece situations.

The higher percentage of corners resulting in shots for winning teams, although with a smaller effect size, underscores their ability to maximize scoring opportunities from set pieces. This efficiency can be linked to game intelligence and decision-making theories, such as those proposed by Memmert et al., (2019). Effective decision-making and execution during set pieces can provide a decisive edge in closely contested matches. These findings are consistent with current theoretical frameworks in sports science and football performance. Specifically, the concept of "match dominance," as discussed by Sarmento et al., (2020), highlights the importance of exerting control over various game elements, including set pieces.

Winning teams' superior performance in corners and their conversion aligns with this theory, reflecting their overall dominance in matches. Additionally, the theory of "situational efficiency" (Ademović et al., 2024) highlights the importance of efficiency in specific game scenarios, such as set pieces. The significant differences observed support this theory, indicating that effective use of corners is a key determinant of match outcomes.

Free Kick

The significant variation in the number of free kicks among winning, drawing, and losing teams, with drawing teams earning the highest mean, suggests that drawing teams may engage in a style of play that induces more fouls from their opponents. This tendency could be attributed to a more aggressive or possession-oriented approach that compels opposing teams to commit defensive errors. However, the absence of significant differences in both the number of free kicks resulting in shots and the percentage of free kicks leading to shots across the three groups implies that teams exhibit comparable levels of efficiency in converting free kicks into scoring opportunities. This finding is consistent with the idea that while earning free kicks can provide tactical advantages, the conversion efficiency of these set pieces into shots or goals does not vary significantly among teams.

The results align with contemporary theories in sports science that emphasize situational efficiency and tactical intelligence. According to Ademović et al., (2024), situational efficiency particularly in set pieces can be a critical determinant of match outcomes. Despite the differences in the number of free kicks, the similar conversion rates across teams suggest that situational efficiency in free kicks is uniformly distributed.

For coaches and practitioners, these results underscore the importance of not only earning free kicks but also focusing on the efficiency of converting these opportunities into shots or goals. Training should therefore include not just strategies to earn free kicks but also drills to improve the effectiveness of free kick executions. This dual focus can provide a competitive edge by maximizing the potential of set pieces.

Penalties

Winning teams have a significantly higher mean number of penalties compared to drawing and losing teams, aligning with recent research emphasizing the tactical advantage provided by earning penalties. Penalties are critical scoring opportunities, and teams that can draw fouls within the penalty area are more likely to score, thus increasing their chances of winning matches. This result suggests that winning teams may adopt more aggressive or skillful play that leads to defenders committing fouls. The higher mean number of penalties converted by winning teams indicates their efficiency in capitalizing on these crucial opportunities. This efficiency can be attributed to better preparation, composure, and skill in penalty situations. Studies such as those by Özdemir, (2019) highlight the psychological aspects of penalty-taking, noting that successful teams often have players with higher confidence and better mental preparation for high-pressure situations.

The substantially higher mean percentage of penalties successfully converted by winning teams highlights their enhanced proficiency in capitalizing on these scoring opportunities. This finding supports theories on situational efficiency in football, as discussed by Ademović et al., (2024). Winning teams' higher conversion rates indicate not only technical proficiency but also effective mental strategies and decision-making under pressure. These findings can be related to contemporary theories in sports science, such as game intelligence and situational efficiency. The ability to earn and convert penalties effectively reflects a combination of tactical acumen, technical skill, and psychological readiness. Memmert et al., (2019) discuss the importance of decision-making and game intelligence, suggesting that players who can anticipate and react appropriately in high-stakes situations, such as penalties, contribute significantly to their team's success.

For coaches and practitioners, these results emphasize the importance of both earning and converting penalties. Training should focus not only on tactics to draw fouls within the penalty area but also on improving players' penalty-taking skills and psychological preparation. Drills that simulate high-pressure penalty situations can help players develop the composure and confidence needed to succeed.

Shooting

Winning teams' significantly higher mean values for shots and shots on target underscore their aggressive attacking style and superior shooting efficiency. This is consistent with the findings of Liu et al., (2020), who emphasized that higher shot volume and accuracy are critical determinants of match success in professional football. Winning teams' ability to generate more shooting opportunities and maintain a high accuracy rate contributes significantly to their success. The higher percentage of shots on target for winning teams highlights their proficiency in converting shooting opportunities into scoring chances. This aligns with the work of Hughes and Franks (2019), who identified shot accuracy as a key performance indicator in football. Teams that can consistently place a higher percentage of their shots on target are more likely to score goals and win matches.

Winning teams' greater number of shots from outside the penalty area indicates their willingness to attempt long-range efforts. This strategic choice can be advantageous, as it diversifies attacking options and puts pressure on the opposing defense. According to Gómez et al., (2018), successful teams often exploit long-range shots to catch goalkeepers off guard and create scoring opportunities from unexpected positions. The significantly higher mean values for shots from outside the penalty area on target for winning teams reflect their accuracy and confidence in taking long-range shots. This finding supports the theory of situational efficiency discussed by Ademović et al., (2024), which emphasizes the importance of executing specific actions effectively under varying game conditions.

Winning teams' ability to accurately target long-range shots enhances their overall attacking threat.

These findings align with contemporary theories in sports performance analysis, such as game intelligence and tactical decision-making. The ability to generate and accurately convert shots, particularly from long-range, reflects advanced game intelligence and decision-making skills. Memmert et al., (2019) highlighted the importance of tactical intelligence in football, suggesting that successful teams possess a higher level of situational awareness and decision-making proficiency. Theories in performance analysis suggest that effective shot-taking is critical for match success. Van Roy et al., (2021) asserts that the quantity and quality of shots are crucial indicators of a team's offensive effectiveness.

For coaches and practitioners, these results emphasize the importance of developing both shot volume and accuracy. Training should focus on enhancing players' shooting skills, particularly in maintaining accuracy under pressure and from various distances. Drills that simulate match conditions and encourage long-range shooting can help players develop the confidence and proficiency needed to capitalize on scoring opportunities.

Conclusion

This study underscores the pivotal role of offensive performance metrics in distinguishing between winning, drawing, and losing teams within the Malaysia Super League. Winning teams consistently demonstrated superior efficiency in converting set pieces, corners, and penalties into shots and goals, underscoring the importance of precision in set-piece execution. These findings align with existing research that emphasizes the tactical advantage of effective set-piece routines (Casal et al., 2015; Memmert et al., 2019) and the role of situational efficiency in match success (Ademović et al., 2024). Additionally, the significantly higher shot volumes and accuracy rates observed among winning teams reflect a more aggressive and accurate shooting approach, supporting the idea that shot quality and frequency are vital to match outcomes (Liu et al., 2021; Hughes & Franks, 2005).

These insights provide practical guidance for coaches and analysts seeking to optimize offensive strategies. Focusing on set-piece conversion, shooting accuracy, and penalty efficiency could offer a competitive edge. Future research might further explore how tactical adjustments during matches impact outcomes, potentially enhancing the understanding of offensive dynamics in football.

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Conflicts of Interest

The authors declare no conflicts of interest regarding this study.

Ethical Statement

This research has met ethical rules. Authorization to conduct this research was granted by the Ministry of Education, Culture, Research, and Technology, Universitas Pendidikan Indonesia (reference number: 1329/UN40.A6/KP/2024).

Author Contributions

Study Design, MNN, RDS, ABHMM; Data Collection, MNN, ABHMM; Statistical Analysis, MNN, RDS, NAK; Data Interpretation, MNN, RDS, NAK; Manuscript Preparation, MNN, RDS, NAK; Literature Search, MNN, RDS, NAK. All the authors agreed on the final draft of the manuscript before submitting it for publication.

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