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Match-related technical performance of qualified and eliminated teams in the group stage of Qatar 2022 World Cup

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Abstract

Introduction. Match-related technical performance is one of the most important factors for success in modern soccer. Aim of Study. This study aimed to try to determine which of the attacking and goal scoring, passing and organizing and defending variables contributed to the success of the national teams participating in the Qatar 2022 FIFA World Cup to qualify for the knockout stage. Material and Methods. The sample consisted of 48 group stage matches. The data were collected from the Whoscord website, which is based on the OPTA system. Results. Results showed that there are statistically significant differences between qualified and eliminated teams in goal efficiency and pass accuracy ($p < 0.05$). However, the effect size was moderate in variables of goal efficiency (ES = 0.74), pass accuracy (ES = = 0.78), total passes (ES = 0.69), and short passes (ES = 0.62). Other variables have small or trivial effect. Conclusions. In conclusion, goal efficiency, pass accuracy are the important success factors in stage group of 2022 World Cup. Therefore, coaches must focus heavily on these variables in their training in order to succeed in qualifying for the knockout stage in the upcoming World Cup tournaments.

KEYWORDS: match performance, success factors, pass accuracy, goal efficiency.

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Introduction

Soccer is a multifactorial sport that depends on physical, technical, tactical, mental, and social affective aspects [7, 29], and external factors such as temperature, humidity, altitude and field condition [2, 5, 31], as the interaction of these factors explains performance in soccer [8, 24, 30]. However, it is difficult to determine which factor has the greatest impact on the success of the team during matches, similarly as in other team sports [10]. Match-related technical performance is one of the keys to success in modern soccer matches [1], it is represented in various defensive, attacking, passing and organizing skills, whether with or without the ball, such as shots, passes, dribbles, tackles, interceptions and offside [15, 20, 25].

Technical performance in soccer matches needs to be analyzed similarly as other physical and tactical aspects to identify characteristics, strengths and weaknesses of players and teams, based on many tracking systems,such as AMISCO, OPTA, and ProZone [33]. This analysis helps to determine the number and type of skills and techniques of each player and each winning and losing team, and also provides us with indicators that help in determining the style of play, such as possession or direct play [14, 19]. That can help coaches to improve their technical and tactical training and prepare for matches and tournaments [27].

There are many studies that have analyzed the technical performance of professional soccer teams, initiated by a study of Bate [3], who showed that direct play and access to the attacking third quickly and with the least back and side passes help create more chances and score goals in the English third division. Similarly to these

findings, when analyzing the technical performance of national teams, Lepschy et al. [19] found that defensive actionsand direct play are more effective than ball possession. Collet [6] concluded that ball possession did not hold significant importance in the success of teams in the Champions League. Additionally, he noted that the advantages associated with ball possession are limited to a specific geographical and competitive context, primarily benefiting elite teams.

On the contrary, it has been concluded that teams that rely on possession play and make many successful passes have a high probability of creating more shooting opportunities and scoring goals [1, 9, 12, 17, 21]. Kubayi and Larkin [16] found that shots on target, total passes, accurate passes, medium passes and ball possession are the most important variables that helped national teams qualify for the knockout stage during the 2018 World Cup.

The difference in the results of these studies is due to the development of soccer playing methods and their difference from one tournament to another [23]. Therefore, studying the technical performance and success factors of teams in national and international tournaments is extremely important, as it guides coaches in tailoring training processes to meet demands of modern soccer. The main aim of this study was to try to determine which of the variables of attacking and goal scoring (total shots, shots on target, shots from open play, shots from counter attack, goal efficiency, aerial won, dispossessed, and offside), passing and organizing (possession, total passes, pass accuracy, short passes, long balls, crosses, through balls, key passes, and successful dribbles), and defensive (tackles, interceptions, fouls, clearances, shots blocked, and total saves) contributed to the success of the national teams participating in the Qatar 2022 World Cup to qualify for the knockout stage.

Material and Methods

Sample

The sample consisted of the group stage matches of the Qatar 2022 FIFA World Cup from November 20 to December 4, as they numbered 48 matches, with an average of 3 matches for each team. At this stage, the national teams are divided into 8 groups, with 4 teams per group. The number of national teams qualified for the knockout stage were n = 16, and the eliminated teams were n = 16.

Data and reliability

The data were collected from the Whoscored website (www.whoscored.com), which specializes in the in-depth analysis of detailed soccer data. It based on the OPTA system, which has been used in previous soccer studies [19, 20, 21, 33], thus being a reliable tracking system to collect live soccer match statistics (intra-class correlation coefficients: 0.88-1.00; standardized typical error: 0.00-0.37) [22]. The study was conducted following the Helsinki Declaration [32].

Match performance indicators

Twenty three variables were selected to express the technical performance of the matches, which were chosen according to the available studies [19, 20, 21, 33], and they were divided into three groups representing attacking and goal scoring, passing and organizing, and defending variables. Table 1 shows the definitions of the variables chosen in the study as reported in the literature [20, 21, 33].

Table 1. Selected match performance indicators

Groups	Variables	Definition
Attacking and goal scoring	Total shots	The total number of attempts to score a goal, including both shots on target and shots off target.
	Shots on target	The number of shots that are directed towards the goal and require an intervention to prevent a goal.
	Shots from open play	The number of shots taken during regular play, excluding set pieces.
	Shots from counter attack	The number of shots taken during a rapid offensive move immediately after a defensive action.
	Goal efficiency (goals × 100/total shots)	The ratio of goals scored to total shots taken.
	Aerial won	The winning ball in the air by a player after an aerial challenge by two players.
	Dispossessed	Losing the ball by the player due to an opponent's tackle or challenge.
	Offside	The number of times a player is in an offside position at the moment the ball is played to them.

Passing and organizing	Possession (%)	The percentage of time a team controls the ball during a match.
	Total passes	The overall number of passes attempted by a team's players.
	Pass accuracy (%)	The percentage of passes successfully completed out of the total attempted passes.
	Short passes	The number of passes covering short distances, typically within the midfield or defensive zones.
	Long balls	The number of passes that cover longer distances, often aiming to change sides or get the ball to the attackers.
	Crosses	The number of passes from wide areas into the penalty area, typically with the intention of creating goal-scoring opportunities.
	Through balls	The number of passes played to a teammate who runs into open space behind the opposing defense.
	Key passes	The number of passes that directly lead to a goal-scoring opportunity for a teammate.
	Successful dribbles	The number of instances where a player successfully advances with the ball while avoiding challenges from opponents.
Defending	Tackles	The number of challenges made by players to regain possession of the ball from opponents.
	Interceptions	The number of times a player interrupts an opponent's pass or intended action, leading to a change in possession.
	Fouls	The number of times that players make interventions on the opponent requires a foul to be awarded to the opposing team according to the arbitration rules.
	Clearances	The number of times players kick or head the ball away from their own goal area to prevent opponents' attacks.
	Shots blocked	The number of times players position themselves to block incoming shots from opponents.
	Total saves	The number of times the goalkeeper prevents the ball from entering the goal and secures it.

Statistical analysis

In this study, data were reported as means ± standard deviation (SD). The data were arranged in Microsoft Excel (Excel 2021, Microsoft, Washington, USA) before being transferred to SPSS (SPSS 26, IBM, Armonk, USA) for statistical analysis. Independent sample t-test was used for between-groups comparison. The significance level was considered $p \leq 0.05$. The effect size (ES) was used to find out the magnitude of differences between groups in all variables. ES values were estimated as described by Hopkins et al. [11], based on the smallest worthwhile change (SWC) and the standardized difference in effect size (ES, 90% CI), as trivial (<0.20), small (0.20-0.59), moderate (0.60-1.19), large (1.20-2.00), and very large (>2.00).

Results

Table 2 shows differences in match-related technical performance between the teams qualified for the knockout stage and the teams eliminated from the group stage of the 2018 World Cup, with statistically significant differences between qualified and eliminated teams in

Table 2. Differences in match-related technical performance variables between qualified to the knockout stage and eliminated teams in 2022 FIFA World Cup

Variable	Qualified (mean ± SD)	Eliminated (mean ± SD)	Sig	ES
Variables related to attacking and goal scoring				
Total shots	11.57 ± 3.73	10.70 ± 3.98	0.52	0.22 (Small)
Shots on target	4.18 ± 1.65	3.49 ± 1.56	0.23	0.42 (Small)
Shots from open play	8.37 ± 2.46	7.58 ± 3.37	0.45	0.26 (Small)
Shots from counter attack	0.36 ± 0.44	0.32 ± 0.43	0.81	0.09 (Trivial)

Goal efficiency	13.95 ± 5.29	9.49 ± 6.63	0.04*	0.74 (Moderate)
Aerial won	13.49 ± 3.67	14.16 ± 2.25	0.53	0.22 (Small)
Dispossessed	9.00 ± 1.63	9.31 ± 2.63	0.68	0.14 (Trivial)
Offside	1.72 ± 1.11	2.03 ± 1.21	0.46	0.26 (Small)
Variables related to passing and organizing				
Possession (%)	52.13 ± 12.97	47.66 ± 8.43	0.25	0.40 (Small)
Total passes	517.10 ± 155.12	423.74 ± 110.06	0.057	0.69 (Moderate)
Pass accuracy (%)	83.45 ± 5.10	79.70 ± 4.44	0.03*	0.78 (Moderate)
Short passes	470.25 ± 158.58	391.00 ± 90.42	0.09	0.62 (Moderate)
Long balls	51.68 ± 9.65	56.81 ± 7.89	0.11	0.58 (Small)
Crosses	16.56 ± 5.26	17.37 ± 4.88	0.65	0.15 (Trivial)
Through balls	1.00 ± 1.09	1.31 ± 1.01	0.40	0.29 (Small)
Key passes	8.66 ± 2.84	7.85 ± 3.13	0.44	0.27 (Small)
Successful dribbles	5.44 ± 2.09	5.73 ± 2.53	0.72	0.12 (Trivial)
Variables related to defending				
Tackles	15.76 ± 4.19	16.38 ± 2.69	0.62	0.17 (Trivial)
Interceptions	7.73 ± 2.18	8.71 ± 2.45	0.23	0.42 (Small)
Fouls	11.68 ± 2.73	12.43 ± 3.17	0.47	0.25 (Small)
Clearances	17.58 ± 6.42	18.87 ± 5.78	0.55	0.21 (Small)
Shots blocked	2.68 ± 1.32	2.98 ± 1.44	0.55	0.13 (Trivial)
Total saves	2.25 ± 1.47	2.80 ± 1.25	0.26	0.40 (Small)

*p < 0.05

goal efficiency (p < 0.05; ES = 0.74) and pass accuracy (p < 0.05; ES = 0.78). The results also showed that there are no statistically significant differences between qualified and eliminated teams in other variables (p > 0.05). Regarding the effect size, total passes (ES = = 0.69) and short passes (ES = 0.62) also have a moderate effect. Other variables have small or non-significant effects (Figure 1).

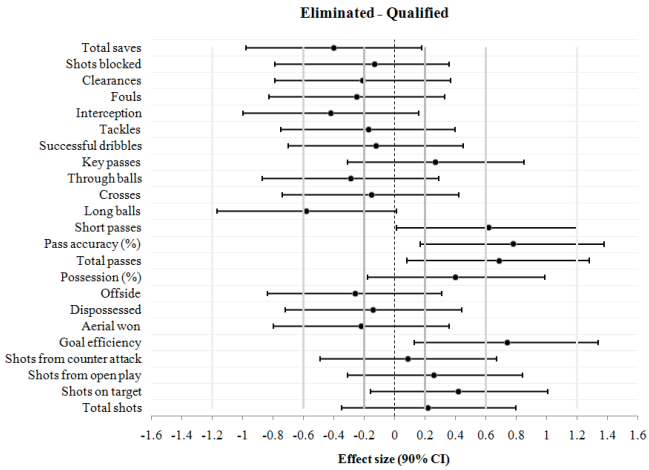

Figure 1. Effect size of each match-related performance variable of eliminated and qualified teams

Discussion

The main purpose of the study was to determine differences in match-related technical performance between qualified and eliminated teams in the group stage of the 2022 FIFA World Cup. The results showed a statistically significant difference between the qualified and eliminated teams in goal efficiency and pass accuracy, with the effect size being small or non-significant in most of the defensive and offensive variables. However, it was moderate in goal efficiency and in some passing and organizing variables, represented in pass accuracy, total passes, and short passes.

These results differed from previous findings for earlier editions of the World Cup 2002, 2006 and 2010, where the winning teams made more shots than the losing or drawing teams, as well as the number of shots on target for the winning teams were greater than the drawing and losing teams [4]. Liu et al. [21] also found that shots on target, shots from counter attack and shots from inside penalty area were the keys for winning teams in 2014 World Cup. Kubayi and Larkin [16] concluded that qualified teams to the knockout stage in 2018 World Cup had a greater number of shots on target and a greater number of set-piece goals than eliminated teams. Similarly, it was concluded that shots on target and total attempts are the major predictors of success in the UEFA Champions League [6, 20]. For another scoring and attacking variable there was a statistically significant difference between qualified and eliminated teams in the variable of goal efficiency in favor of qualified teams. This finding is consistent with those reported in many previous studies, where goal efficiency was the most important factor of success in soccer matches of the first Bundesliga [34], and a success factor in FIFA World Cup 2014 and 2018 [19]. This indicates that qualified teams to the knockout stage were more decisive in front of goal than the eliminated teams despite the similarity in the number of shots, which confirms that shot quality is more important than the number of shots.

Goal efficiency is related to several factors represented in the physical, technical and tactical factors. Rodenas et al. [26] reported that the power and accuracy of shooting, positioning, the quality of the teams, set pieces, possession play, the action that precedes the goal (passing or assisting), the location of the match (home or away) and the time of the match are all factors that can control the goal efficiency. Since the current study investigated the technical and tactical performance of the qualified and eliminated teams in the group stage of the World Cup, it showed a statistically significant difference in one of the factors affecting goal efficiency, which is the accuracy of passing. This may indicate that accurate passes helped teams that qualified for the knockout stage to finish attacks better, because accurate passes and assists that reach players in good shooting positions can help in efficient shooting and goals [28]. There is another factor that can be an important factor in goal efficiency for the qualified teams and not represented in this study, which is the quality of the players, as the positioning, shooting technique, anticipation and decision-making are among the most important characteristics of the decisive players [14, 26].

For passing and organizing variables, a moderate effect size was obtained in total passes, short passes and successful passes, with a significant difference in the pass accuracy variable ($p < 0.05$). This is similar to previous findings in the FIFA World Cup [16, 21], the UEFA Champions League [33], and the Spanish Professional Soccer League [17]. This indicates that passing accuracy and avoiding random play and long balls are some of the most important success factors in soccer matches [15, 18].

Although passing variables are related to possession [1, 15, 16], this study proved that the teams qualified for the knockout stage made more accurate passes than the eliminated teams, while possession was close for both categories. This confirms that ball possession involves a complex interplay between strategic choices, defensive tactics and quality of ball handling [6], rather than being dependent solely on passing accuracy. In turn, when we look at the effect of passing accuracy as a single variable without linking it to possession of the ball, passing accuracy has a great importance in the success of teams in soccer, as it helps to create opportunities to score goals as previously explained. This variable can also determine the team's ability to move from the defensive to offensive stage efficiently [13]. While possession of the ball remains an essential aspect, the mere quantity of it may not guarantee success for soccer teams [6].

Regarding defensive variables, performance was close between the teams that qualified for the knockout stage and eliminated teams, and this is consistent with what has been found in the literature [16, 33]. In contrast to prior results of the FIFA World Cup 2014 and 2018, defensive variables were the most important factor of success [19].

The similarity in defensive performance between the qualified teams and the eliminated teams indicates a convergence in the level of defensive performance for both categories, in addition to the remarkable results in passing, organizing, attacking and scoring goals. The study demonstrated a similarity in performance across most variables, with exceptions noted in goal efficiency and passing accuracy variables. These variables were identified as crucial technical factors in determining the teams that progressed to the knockout stage. Therefore, it can be inferred that both categories of teams exhibited comparable levels of performance in the variables studied. This leads us to the limitations of the study, which did not address all the variables associated with the technical performance, with the technical aspect being one part of performance in soccer. It did not look at other important factors such as the physical, tactical

and psychological aspects, and some other factors such as training strategies and players' injuries [2].

Conclusions

In conclusion, the findings of this study confirm that significant differences exist between qualified and eliminated teams in the group stage of the 2022 World Cup, particularly in terms of goal efficiency and pass accuracy. Notably, the observed effect size was moderate for the aforementioned variables, as well as the total number of passes and the number of short passes. Therefore, the authors suggest that coaches heavily emphasize enhancing goal efficiency and passing-related variables, especially passing precision, during their technical and tactical training. This emphasis may help teams to succeed in reaching advanced stages in the upcoming World Cup tournaments.

Conflict of Interest

The authors declare no conflict of interest.

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