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Does Market Value Predict the Success of the Game? Analysis of the European Football Championship – UEFA 2024

¿Predice el Valor de Mercado el Éxito del Juego? Análisis de la Eurocopa de Fútbol – UEFA 2024

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SUMMARY: This study seeks, from a theoretical perspective, to determine if there are statistically significant correlations between market value and national teams' performance during the European Football Championship – UEFA 2024, as well as to explore the association of the most expensive national teams with key performance indicators. A total of 51 matches involving 24 teams participating in the championship were analyzed. The variables included in the research were: market value, average points per game, average passing accuracy %, average attacks per game and average shots per game. All results were collected from the official UEFA and Transfermarkt.de websites. Spearman's correlation analysis and linear regression were used for data processing. Results show that market value accounts for over 44% of the variance in average points scored per game, $F(1, 22)$ 17.83, $p < .001$. The correlation analysis revealed significant relationship between the market value of national teams and the percentage of passing accuracy per match ($r = .70$; $p < .05$; $N = 24$). With an increase in passing accuracy, there is also an increase in the number of completed attacks per game $F(1, 22)$ 12.15, $p < .001$, as well as in the average number of shots per game $F(1, 22)$ 5.66, $p < .02$. The significant correlation between market value and average points earned per game supports the hypothesis that financial investments and market value can significantly affect the results of a national team. This correlation also supports national teams ranked higher in terms of market value from another aspect. Even though they did not reach the semi-finals or the final, national teams demonstrated significant performance in key game indicators and achieved higher values compared to national teams with lower market value.

KEY WORDS: Market value; Game analysis; Performance indicators; Soccer.

INTRODUCTION

Rapid technological development has facilitated in the collection of precise data during competitions, thus motivating researchers to constantly search for objective information that may have an impact on football game performance.

Understanding the performance structure of a sport is closely related to setting training goals and tasks (Hohmann *et al*., 2020), which in reality helps to provide information on the determining aspects of the results.

However, football is often considered a chaotic game in essence, making success a matter of multiple factors (Ferrarini, 2016; Kapsalis *et al*., 2023). Therefore, identifying key performance indicators is highly complex and at the same time essential for guiding the preparation of football teams. The market value of a team is believed to reflect its quality and may correlate with a number of factors that impact success. Previous efforts in describing factors influencing the success of the game have been investigated in various dimensions and parameters, such as physical, technical and tactical (Sarmento *et al*., 2014), match venue (Dolci *et al*., 2020), home or away, the influence of individual characteristics such as anthropometric parameters (Aquino *et al*., 2020), that influence performance, tactical formations (Memmert *et al*., 2019), where the 3-5-2 formation appears more compact and enables the highest pressure on opposing teams compared to other formations, etc., thus contributing to the clarification of the most influential variables on the success of the game.

Among the most common factors in research that impact the success of the game appears to be ball possession (Evangelos *et al*., 2014; Liu *et al*., 2015, 2016; Yang *et al*., 2018; Alves *et al*., 2019; Fernández-Cortés *et al*., 2022; Plakias *et al*., 2022). Without neglecting the complexity of

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clearly defining the identification of key performance factors in a football game, researchers (Liu *et al*., 2016) claim that ball possession and passing accuracy are considered decisive. However, in some empirical studies (Vecer, 2014; Van Roy, 2021; Is¸ıkdemir *et al*., 2023) it is emphasized that teams with greater chance of winning games are those that attack in the central areas of the field, make fewer crosses, and are able to create chances of shots on goal, preferably with minimal ball possession.

Current studies on key performance indicators have increasingly focused on how teams approach attack because it is considered decisive. However, Forcher *et al*. (2023), after analyzing the aspect of the offensive style of play (with counterattacks or ball possession), comes to the conclusion that these factors have a greater impact on the technical and physical performance rather than on the variables directly related to the success of the game. He claims that the style of play with ball possession is characterized with horizontal passes and high percentage of ball possession, which is also evidenced in a study (Yi *et al*., 2019), compared to the style of play with counterattacks, which is mainly characterized with long passes. From a physical perspective, teams focused on ball possession are more physically demanding throughout the game with accelerations, deaccelerations, high-intensity running distances and sprints, while teams with counterattacking style cover more high-intensity distances and sprints during the attacking time.

We believe that, in addition to the attacking approach, the number of attacks that a team manages to create during a match is also important. Therefore, this indicator is included in the following calculations in this study. On the other hand, while researchers continuously analyze performance indicators that contribute to the success of the game, understanding the impact of financial value on a team's performance is also considered essential. The complex dynamics of success in football is multidimensional, requiring research on financial value to be analyzed from different perspectives.

Through an empirical model analyzing the financial performance of the top 30 European clubs from 2004 to 2013, authors concluded that sporting success guarantees financial success and increases the value of the sports brand; just as sporting success is determined by investments in players where most of these investments tend to come from private and foreign investors (Rohde & Breuer, 2016).

The analysis using multiple criteria of club ranking based on their financial and business performance, found positive correlation between business performance and sporting performance (Galariotis *et al*., 2018). In other words, financial performance significantly impacts sporting performance and vice versa, sporting performance impacts financial growth. Expectations are that the most expensive teams will perform better because their value shall increase as a result of their work. Although the regression analysis of ball touches in relation to market value was significant, the percentage increase in player's market value is low, suggesting that while it is not one of the most important factors, it still has some influence. This comparison shows that there are some players with low market value who have as many ball touches during a game as those with higher market value. The research suggests that smaller clubs could benefit from finding players with lower market value with similar number of ball touches per game, and this could have a bigger influence on the game.

In general, there is limited research on the extent to which team's market value actually justifies on-field performance in reality.

The aim of this study, from a theoretical construct perspective, is to examine teams' market value related to the success of the game during the European Football Championship – EURO 2024. To what extent were national teams able to meet performance expectations in relation to their market value? What is the correlation between national teams and key performance aspects such as average passing accuracy, average attacks per game and average shots per game? Studies reveal that passes with higher potential to break through the opposing team, result in more successful attacks (Kempe & Goes, 2019; Forcher *et al*., 2021).

MATERIAL AND METHOD

Sample. A total of 51 matches from 24 participating teams in the European Football Championship in Germany – UEFA 2024 were included.

Statistical data of the national teams from the official UEFA website were used to analyze relevant factors affecting the success of the game (https://www.uefa.com/ euro2024/ statistics/teams/).

Data on the financial value of national teams were obtained from the Transfermarkt.de website (https://www.transfermarkt.de/vereins-statistik/wertvollstenationalmannschaften/ marketwertetops/plus/1?kontinent_id=6&yt0=Anzeigen).

Procedures. Since some national teams failed to pass the group stage and played only three matches, finalist teams played seven matches in the championship. Therefore, the average points collected per game were calculated for each national team.

Goals scored during regular time, extra time and penalties were included to examine the variance in average points earned per game related to teams' market value. However, all goals scored by teams from penalties were excluded in order to analyze the correlation between key success variables (average passing accuracy %, average attacks per game and average shots per game) and success of the game (average points earned per game).

Statistical analysis. Data were analyzed using linear regression to assess the predictive significance of the market value of national teams in terms of points earned per game. Subsequently, the correlation between key performance variables and teams' market value was examined using Spearman's correlation analysis. Finally, recognizing the importance of the average passing accuracy variable, linear regression was conducted to assess its impact on the attacks per game and total shots per game variables.

The results were analyzed using the SPSS 26.0 software (IBM Corporation, New York, NY, United States).

RESULTS

Fig. 1 shows the descriptive statistics data of all participating national teams in the championship. It can be observed that the top of the table shows the highest market values according to Transfermarkt.de before the start of the championship, and exactly four of the six most expensive teams (England, Spain, France and Netherlands) reached the finals and semi-finals of the championship.

On the other hand, the two national teams ranked last in terms of market value (Romania and Albania) did not even pass the group stage. The percentage difference between the most valuable and the least valuable team in this championship is 93.94%.

Fig. 2, from a theoretical construct perspective, shows the relationship of the market value of national teams (recorded one day before the start of the championship) and average points earned per game during the European Football Championship – UEFA 2024.

It can be observed that market value accounts for over 44% of variance in average points earned per game, $F(1, 22)\ 17.83$, $p < .001$. In other words, this visualizes the expectations of national teams related to their market value. Once again, the champion of this European Championship reached the maximum possible, not losing or drawing a single match and earning on average three points per game, thus exceeding expectations. In contrast, the runner-up, England, managed to collect on average two points per game. As the most valuable national team in the championship, it failed

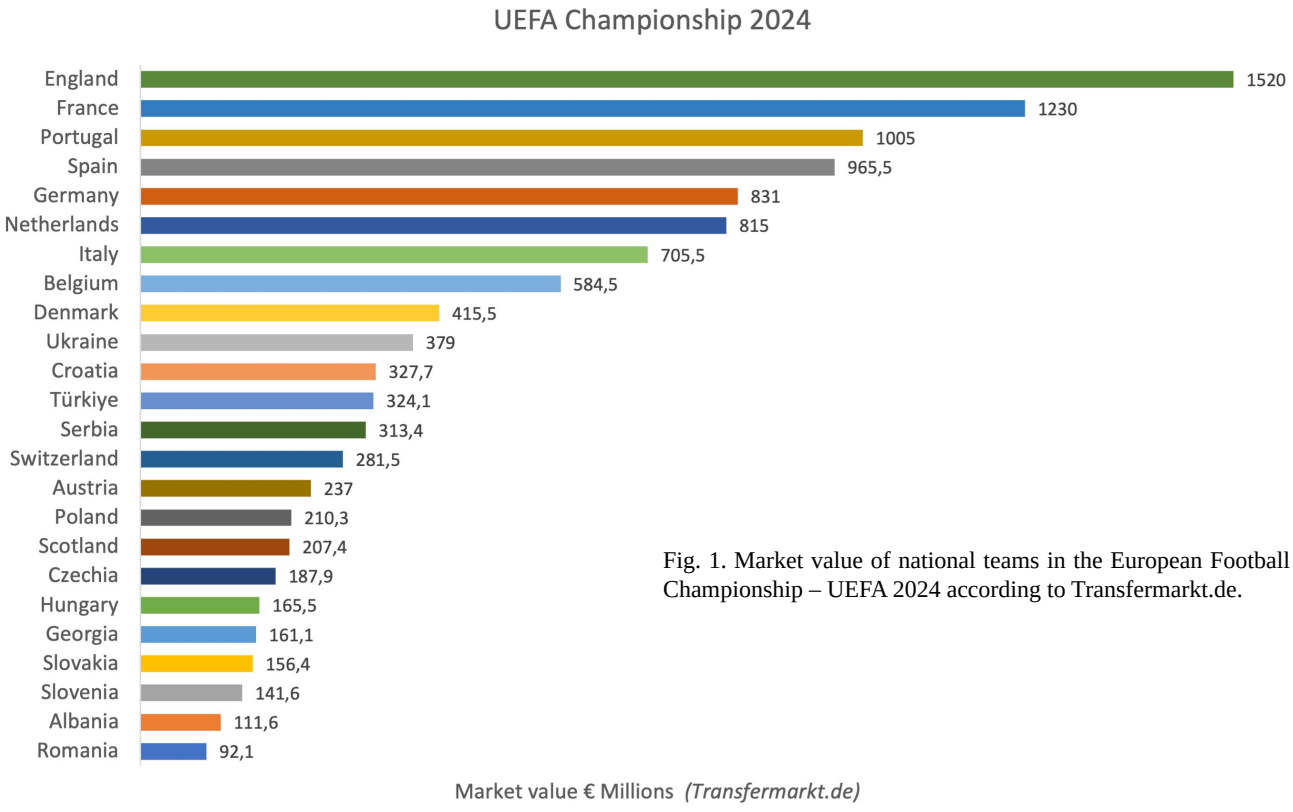

Fig. 1. Market value of national teams in the European Football Championship – UEFA 2024 according to Transfermarkt.de.

to meet predicted expectations and was positioned below the regression line. Conversely, Romania's performance with the lowest market value managed to achieve an average of one point per game, thus exceeding predictive expectations related to its market value.

The percentage of passing accuracy is considered as one of the key performance factors of success in a football game. In this championship, passing accuracy ranged from 75 % to 91.2 % per match. Finalist and semi-finalist teams were ranked at the top of the table, both in terms of passing accuracy and market value. The correlation analysis revealed significant relationship between the market value of national teams and the percentage of passing accuracy per game *($r = .70$; $p < .05$; $N = 24$)*.

Fig. 3 shows that the percentage of passing accuracy accounts for over 35% of the variance in average attacks per game. Thus, the number of attacks per game increases with the increase of passing accuracy, resulting in a statistically significant correlation *$F(1, 22)$ 12.15, $p < .001$*.

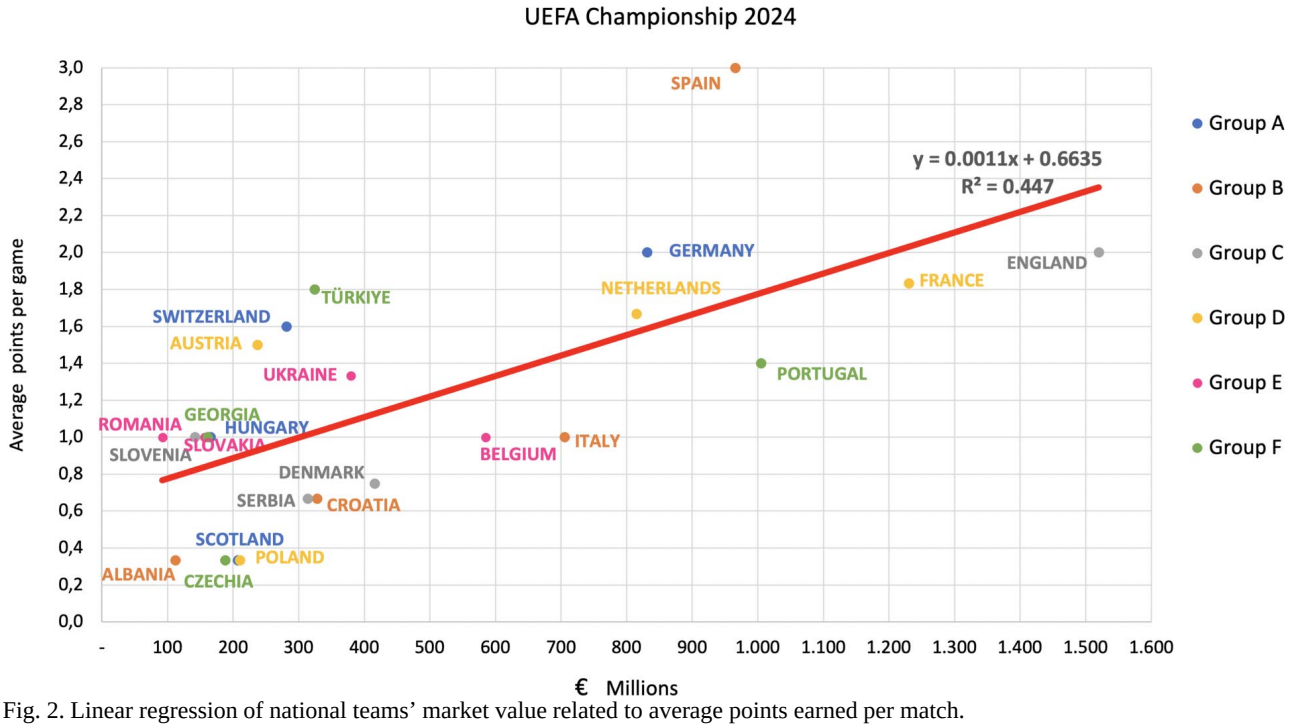

Fig. 2. Linear regression of national teams' market value related to average points earned per match.

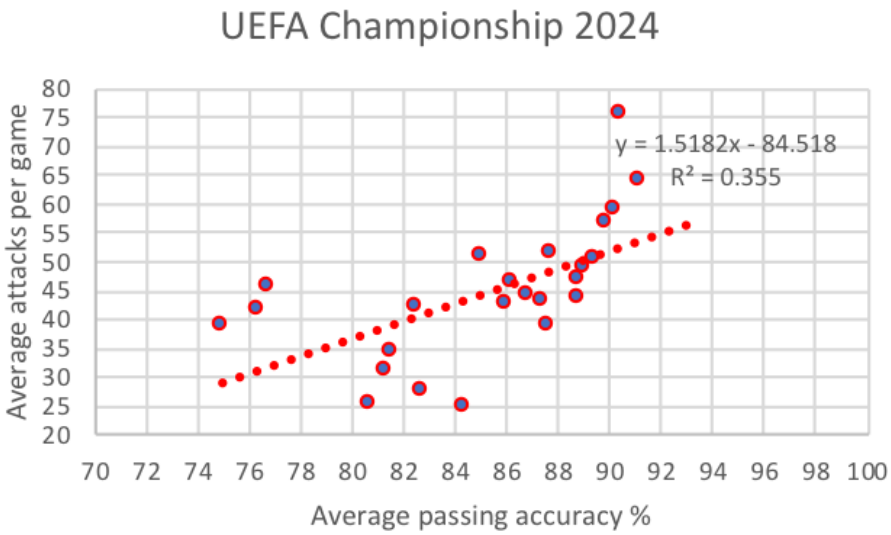

Fig. 3. Linear regression of average passing accuracy percentage related to average attacks per game.

Fig. 4 illustrates that passing accuracy shows statistically significant correlation with the average number of shots on target *F(1, 22) 5.66, p < .02*, suggesting that teams with higher percentage of passing accuracy are likely to create more shooting opportunities. This is due to the fact that accurate passes help in keeping the ball and creating shooting opportunities. The part of explained variance is relatively low (R^2 = .20), highlighting the fact that a significant number of goals is not solely a result of passing accuracy, such as shots from individual dribbles in the penalty area, long-distance shots outside the penalty area, free kicks, penalty kicks, and so on

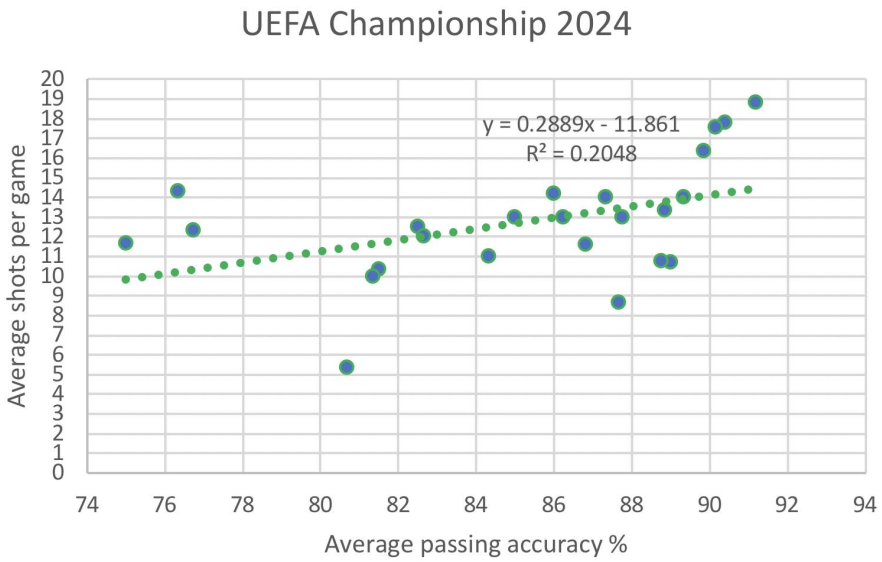

Fig. 4. Linear regression of average passing accuracy percentage related to average shots per game.

DISCUSSION

The analysis initially takes into account various aspects of relevant factors affecting the success of the game. Subsequently, it evaluates their characteristics and implications by using the values from Transfermarkt.de using statistical calculations.

However, it is important to note that this research provides theoretical perspective on the relationship between market value and sporting performance. While the market value of a team is considered as an indicator of various factors, such as the quality of players, financial investments in teams, it cannot be considered a direct measure of the actual sporting performance. Market value cannot score goals or win matches directly, but it reflects the financial resources and quality available to a team.

If a player's income is known, then the combination of performance and income allows examining the theories of contribution. Players' contracts are often not respected in European football which represents the sport's wealthiest market, thus resulting in uncertainty about their actual earnings (Coates & Parshakov, 2022). This fact makes it difficult to study and analyze the players' market value in this sport. Additionally, the market value of football players is a very complex construct influenced by a variety of factors, including media perception.

While the results of the study by Prockl & Frick (2018) suggest that market values of players analyzed from Transfermarkt.de are very good indicators of current and future players' salaries, another analysis by Kirschstein & Liebscher (2019) evaluating Bundesliga players in the 2016 season reveals large deviations between predicted and actual market values.

However, the market value of national teams (Transfermarkt.de) in our analysis can be described as an economic indicator that, to a certain extent, may indirectly affect sporting performance expectations of national teams. This specific analysis, focusing on identifying variables that influence the success of national teams, generally resulted with a statistically significant impact.

This European championship proved that expensive national teams in terms of their market value, such as Portugal (the third most expensive national team) and Germany (the fifth most expensive national team), even though failed to qualify in the final or semi-finals, they showed higher

performance levels related to key variables: passing accuracy %, average attacks per game and average shots per game. This means that the market value of these teams shows a correlation with the on-field performance, even when teams fail to reach the final stages of the championship.

CONCLUSION

The significant correlation between market value and points earned per game supports the hypothesis that financial investments and market value can substantially impact a team's performance. Subsequently, the market value of national teams accounts for less than half of the variance of average points earned per match (R2=0.44). The most expensive national teams ranked high in terms of market value show higher performance values in passing accuracy %, average attacks per game and average total shots, even when they do not reach the final or semi-finals, reflecting a correlation of market value with key performance factors. Market value shows significant correlation with passing accuracy, as an important factor for the success of the game. National teams that achieved passing accuracy of more than 81% completed in average up to 75.8 attacks per game, while passing accuracy of more than 90% contributed to an average of up to 18.8 total shots on target per game.

However, this study should be viewed within the context of football's complexity, where many other variables play a significant role. This explanation provides a comprehensive perspective on the importance of statistical results and positions the study as a part of a theoretical model that examines the complex correlations between financial value and sporting performance in football, without disregarding the aspects of influential indicators.

Further research is needed to explore the role of other additional factors and to understand the exact mechanisms that may influence the correlation between market value and sporting performance in football.

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RESUMEN: Este estudio buscó determinar, desde una perspectiva teórica, si existen correlaciones estadísticamente significativas entre el valor de mercado y el rendimiento de las selecciones nacionales durante la Eurocopa de Fútbol – UEFA 2024, así como investigar la asociación de las selecciones nacionales de mayor costo, con los indicadores clave de rendimiento. Se analizaron un total de 51 partidos de 24 equipos participantes en el campeonato. Las variables incluidas en la investigación fueron: valor de mercado, promedio de puntos por partido, porcentaje promedio de precisión de pase, promedio de ataques por partido y promedio de tiros por partido. Todos los resultados se obtuvieron de los sitios web oficiales de la UEFA y Transfermarkt.de. Para el procesamiento de datos se utilizaron el análisis de correlación de Spearman y la regresión lineal. Los resultados muestran que el valor de mercado explica más del 44% de la varianza en los puntos promedio anotados por juego, $F(1, 22)$ 17.83, $p < .001$. El análisis de correlación reveló una relación significativa entre el valor de mercado de los equipos nacionales y el porcentaje de precisión de pase por partido ($r = .70$; $p < .05$; $N = 24$). Con un aumento en la precisión de pase, también hay un aumento en el número de ataques completados por juego $F(1, 22)$ 12.15, $p < .001$, así como en el número promedio de tiros por juego $F(1, 22)$ 5.66, $p < .02$. La correlación significativa entre el valor de mercado y los puntos promedio ganados por juego respalda la hipótesis de que las inversiones financieras y el valor de mercado pueden afectar significativamente los resultados de un equipo nacional. Esta correlación también respalda a los equipos nacionales clasificados más alto en términos de valor de mercado desde otro aspecto. Aunque no llegaron a las semifinales ni a la final, las selecciones nacionales demostraron un rendimiento significativo en indicadores clave del partido y obtuvieron valores superiores a los de selecciones con menor valor de mercado.

PALABRAS CLAVE: Valor de mercado; Análisis del partido; Indicadores de rendimiento; Fútbol.

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