

Explore The Quality of Scoring Opportunities by Heatmaps of The Egyptian National Soccer Team Players and Its Relationship to Expected Matches Results

***Asmaa Tarek Hassan | ** Mohamed Hazem Abu Yousef | *** Mohamed Refaei Mostafa**

A study was conducted to explore the quality of scoring opportunities in heat maps for the players of the Egyptian national football team and their relationship to the expected results of the matches, aimed at developing a vision to improve the quality of scoring opportunities for the players of the Egyptian national team in the 2021 African Cup of Nations in Cameroon, through heat maps and analysis of data and statistics, as an attempt to benefit from an innovative method based on scientific foundations and far from traditional methods and keeping pace with contemporary technological development in the use of modern technologies to have a positive and influential role in improving plans Coaches and their training methods to develop their players and work to improve their levels and show them in the best form and performance in various competitions and find ways to reach the goal and scoring to get to win various matches and tournaments.

As the analysis of advanced competitions using modern computer technology programs can guide the training process through analysis and comparison as an objective way to identify the real level and try to develop it, and it is necessary to conduct analytical studies regularly and continuously, since the manual analysis process requires a relatively long time, if we conduct the analysis after the match for a while, the data obtained may be insignificant.

The importance of the study appears in being a modern scientific attempt to take advantage of artificial intelligence and data science in analyzing football matches to keep pace with the technology of the times of scientific progress and employ the huge potential that must be auxiliary factors for the sports coach in the process of sports training and match management; Opportunities available for scoring, whether for the team or the opponent, and dealing immediately with them during the match to win, as well as choosing exercises that contribute to the development of players' performance and include them in training programs effectively and quickly, which saves time and saves effort to upgrade the capabilities of players on an ongoing basis.

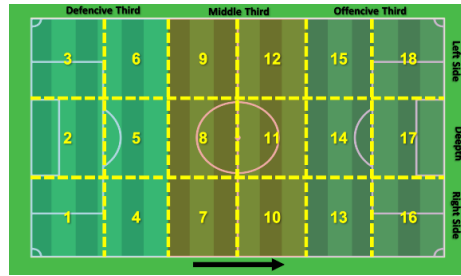
* Instructor - Department of Sports Training and Movement Sciences - Faculty of Physical Education for Girls - Alexandria University. gs.asmaa_tarek@alexu.edu.eg

** Professor of Measurement and Evaluation in Sports Training Emeritus- Department of Sports Training and Movement Sciences - Faculty of Physical Education for Girls - Alexandria University. mohamed.abouyoussif@alexu.edu.eg

*** Assistant Professor - Department of Theories and Applications of Sports and Racquet Games - Faculty of Physical Education - Port Said University. m.refaei@phyd.psu.edu.eg

The study relied on extracting heat maps for the team's individual players, and then for the team as a whole, as well as distribution maps, as well as the use of SofaScore application data, and the Whoscored website, and the playground was divided into (18 zones) to determine through which the most zones of activity of the Egyptian national team players are determined Figure (1), as well as the most contributing players in the scoring opportunities industry and the most zones in which players create scoring opportunities, and the compilation of heat maps for the players most involved in the scoring opportunities industry for the national team. Egyptian championship.

Figure (1) Dividing the stadium into 18 zones including defense, midfield and attack areas as well as depth and periphery areas



The results showed that there is no statistically significant correlation between the zones of high activity of the players and the zones of creating scoring opportunities, as the activity of the highest players was concentrated in the defensive third and then the middle third, which explains why the Egyptian goal received only two goals throughout the tournament, while it is clear that the offensive third was the least active by the Egyptian national team players during the tournament matches, so the offensive third zones were the least active throughout all matches, while the most areas that were created scoring opportunities This is one of the strongest reasons for the low scoring rate of the Egyptian national team, as the zones of high activity of players during matches differ from the zones where scoring opportunities are created.

It also appeared that the quality of scoring opportunities for the Egyptian national team is very weak, as only (4 scoring chances) were translated into goals out of (57 scoring chances) by 7%, and there are (28 scoring chances) that were finished outside the goal by 49%, which indicates a low accuracy of shooting on goal among the players of the Egyptian national team, for example, it appeared that the highest number of scoring chances was in the Guinea-Bissau match (13 scoring chances) by 23%, and by returning To the combined heat map of the Egyptian national team players in that match, Figure (2), we find that the zones of the field with high activity by the players were in the opponent's half of the field, and there was average activity in the offensive third of the Egyptian team, which explains why more scoring chances were created in that match, while it appeared that the lowest number of scoring chances for the Egyptian national team was in its first match against Nigeria (3 scoring chances) by 5%, and similarly when Refer to the combined heat map of the players in the Nigeria match, Figure (3)

We find that the highest activity of the Egyptian players was in their half of the field, as their activity in the offensive third is almost non-existent, which confirms that the activity of players in certain zones of the stadium negatively or positively affects the number of scoring opportunities that can be created in the match, and thus affects the number of goals that can be scored.

Figure (2) Combined heat map of the Egyptian national team players in the Guinea-Bissau match

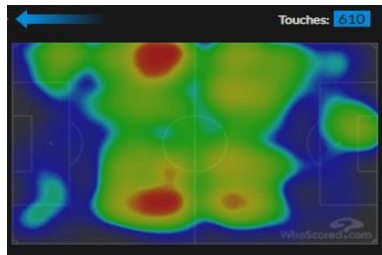


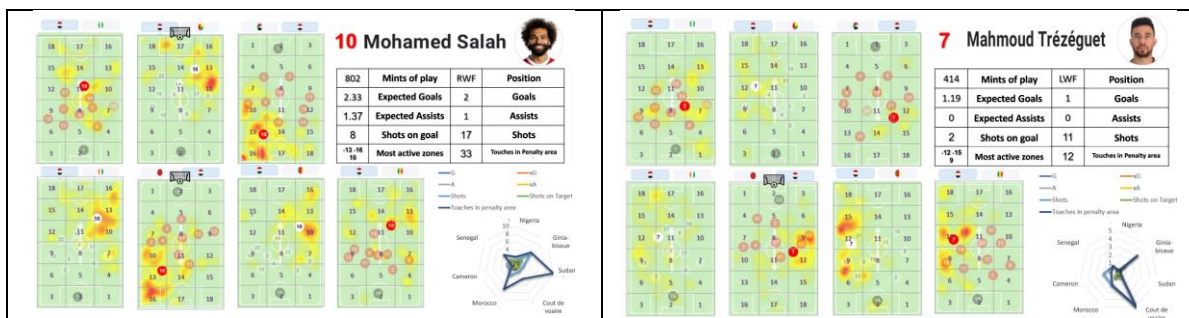
Figure (3) Combined heat map of the Egyptian national team players in the Nigeria match



This was repeated in all matches of the tournament, the closer the activity of the Egyptian national team players to its attack zones, the more chances they created, and therefore more attempts on goal, that is, it is one of the factors that help predict the results of the matches.

It turned out that the most participating players in creating scoring opportunities came in first place (Mohamed Salah) scoring two goals and assisting a goal, then (Mahmoud Trezeguet) in second place by scoring a goal, then third place by (Mohamed Abdel Moneim) by scoring a goal, then (Amr Al-Souliya) in fourth place by assisting two goals, then fifth place for (Moustafa Mohamed) by shooting the second most shots on goal (6 shots) after Mohamed Salah, who shot (8 shots on goal). , followed by (Omar Marmosh) in sixth place as the most player who touching the ball inside the box.

Figure (4) Individual analysis of the most participating players in creating scoring opportunities for the Egyptian national team in the tournament



The above emphasizes the importance of relying on modern technologies and the science of data analysis in football, because of its great importance in identifying the strengths and shortcomings in the performance of the player or team, and gives an immediate and accurate indication about the progress of the match, and the extent to which it is close to

achieving its goals through simple graphs such as heat maps, the coach can just take a look at them to make decisions that can modify the team's performance, and redirect it to the right track to win the match.