Clustering Analysis of Performance Differences Between Veteran and Rookie Basketball Players

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Professional basketball teams constantly strive to balance veteran leadership with emerging talent, aiming to optimize player performance and team success. This study aims to analyze the impact of experience on player performance by comparing veterans and rookies using their statistics over five years. The study focuses on key performance metrics, including points, player efficiency rating (PER), win shares (WS), box plus/minus (BPM), and value over replacement players (VORP). Players with less than four seasons were classified as 'Rookies,' while those with four or more seasons were classified as 'Veterans.' Using K-means clustering we identified three distinct clusters based on performance metrics. Cluster 0 had rookies with low values of performance metrics, Cluster 1 included both rookies and veterans having medium values, and Cluster 2 consisted only of veterans with high values. We also used DBSCAN algorithm to validate and support our findings. It recognized that high-performing veterans as outliers. Our findings illustrate the significance of experience in player performance as veterans consistently outperformed rookies in all metrics. The study suggests that team performance can be improved by combining rookies with experienced players. It is possible that future research would then go on to develop an even deeper understanding of performance dynamics using new algorithms or measurement techniques.

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