

An Efficiency Analysis of "Power 5" Football Coaching Salaries from 2011 to 2019

Jeffrey Fountain, Nova Southeastern University

Peter Finley, Nova Southeastern University

Abstract

"The rise in salaries of college football head coaches, as well as assistant coaches, has garnered media attention in recent years (Faraudo, 2021). As athletic programs increase salary expenditures, on-the-field expectations also increase (Johnson, 2022). The purpose of this study was to examine how efficient "Power 5" football programs have been when analyzing total football coaches' salary expenditures relative to on-the-field performance. An efficiency analysis was conducted using Data Envelopment Analysis (DEA), which is a linear programming technique that measures relative efficiency. A cross-sectional analysis allowed for comparisons within and between programs from 2011 through the 2019 seasons.

Literature Review

The foundational DEA CCR model was published in 1978 by Charnes, Cooper, & Rhodes (CCR) and was created to find efficient benchmarks among multiple decision-making units (DMUs) (Charnes et al., 1978). Numerous other DEA Models have been created since then, including models using super-efficiency, which was introduced by Andersen & Petersen (1993) to differentiate efficient DMUs through a ranking procedure. The extant literature shows that DEA has been utilized occasionally in sport-based research over the last few decades. Bhat et al. (2019) reviewed journal articles and books and found 100 published sport-based articles that utilized DEA, with a wide variety of both on-the-field and off-the-field inputs and outputs being considered. While many sport-based DEA studies have focused on the players, a few have examined program expenditures (Beaudin, 2018; Bouchet et al., 2022; Falasca & Kros, 2018; Moseley, 2021; Omondi-Ochieng, 2019).

Methodology

DEA Shiny R was used to perform the analysis using the super-efficiency CCR model. Each football program was a DMU, and the study included all public universities in the "Power 5" conferences. The model consisted of one input variable (Total Football Coaching Salaries), as obtained from the Knight-Newhouse College Athletics Database (2022). Three output variables were used in the model (Sagarin Rating, ELO, and Winning Percentage). The Sagarin Ratings were obtained from USA Today (2022), and the Wins, Losses, and ELO data were obtained from collegefootballdata.com (2022). The DEA model was run separately for each year and for the combined years from 2011 to 2019.

Results, Discussion, Conclusions, & Contribution

Our findings will be presented at the conference and will focus on comparative analysis within and between the five conferences. As an example, the combined nine-year analysis of the Pac 12 conference schools showed that of the nearly \$680 million spent on coaching salaries for all public football programs in that conference, the inefficient programs overspent by more than

\$91 million compared to the two most efficient programs in the conference. The results suggest that it is worth having further discussions about how coaches' should be compensated”.