

Evaluating Management Efficiency of Korean Professional Soccer Teams using Data Envelope Analysis (DEA)

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The purpose of this study is to evaluate management efficiency of professional teams in the Korean Football Association by using Data Envelope Analysis (DEA). The professional soccer teams in Korea are in urgent need of efficient management as no teams are making profits and their financial deficits are growing (Choi, 2001). DEA is a technique to measure relative efficiency when coping with multiple inputs and multiple outputs (Banker, Charnes, & Cooper, 1984). We implemented total player salary as input item and winning percent and total fan attendance as output items to evaluate 11 teams's management efficiency for the 2004 season. The analysis identified teams operating relatively efficient and teams that are not efficient. The results revealed that a team's efficiency score is not necessarily correlated to the final standings in the league. Rather, teams relatively mediocre sized outperformed the teams well-known for its financial abundance in efficiency score.

It is typical in Korea for a multinational conglomerate corporation to own a sport team and provide full financial support for its team operations to cover the team's heavy deficit. The owners do not care too much about spending money on a sport team because they feel obligated to do so, often pressured by customers and the local society. At some point in the early 1980's, the corporations were forced by the government to operate a professional sport team and provide financial support. This phenomenon commenced when the government took complete control of sport only to utilize politically for the betterment of its political party to gain lawful support from the nation and to consolidate its supremacy to maintain the regime. This in turn forfeited the proper role of sport (Lee, 2002). As a result of the professional sport environment in Korea, naturally, the owners seek no other values in a pro-sport team other than a promotional tool to aid corporate product advertisement or brand exposure (Choi, 2001). Certainly there exist a distorted relationship between the team and the parent company and perversion of sport by the political and social environment.

The two major problems, increasing deficits and teams construed as a tool of promotion, require alteration for the pro-sport teams to survive in the ever more competitive global market. However, the traditional method of business entity evaluation based solely or heavily on its financial status is meaningless to these sport teams because of its impotent ability to create any profit on its own. Therefore, improvements need to be done in the operational side of the team and DEA (data envelope analysis) provides the parent company or the team to have a better idea in efficient team operation.

DEA, initiated by A. Charnes, W.W, Cooper & Rhodes (1978), builds on the seminal paper by Farrel (1975) and extends the engineering ratio approach to efficiency measurement from single-input, single-output situations to multiple-inputs, multiple-outputs situations. DEA takes account of all the important factors that affect a DMU's (decision making units) performance to provide a complete and comprehensive assessment of efficiency. The outcome of the analysis is displayed in ratio for those making best use of their resources rated as being 100% efficient while the inefficient ones achieve lower scores. It also identifies the units which are performing best and their operating practices can then be examined to establish a guide to best practice for others to benchmark and emulate. In recent years, DEA has been applied increasingly to various aspects from airline companies to banks, retail shops, and to family restaurants and so on (Hong, 2003; Cellini et al., 2000; Martin & Sutter, 2003).
Data: For the analysis, data from Korean professional soccer team (2004 season) were collected from personnel of teams and league officials. As for selecting input and output items, player salary was selected for input item since it is the most prominent input resource that managers use to acquire players and form a team to perform. In the meantime, two items, fan attendance and winning percentage, were selected for output items. The reason these two items were chosen for output items among many others is because they are the two most prominent factors that display a team's performance. Data regarding ticket sales is difficult to collect since the information is not disclosed to the public and often it is confidential among certain teams. However, fan attendance on the other hand is exposed to the public and it represents ticket sales. Thus, ticket sales was replaced by total fan attendance. According to a certain limitation suggested by DEA, the total number of units (in this case 11 teams) to be evaluated should exceed three times the total number of input and output items combined for more accurate evaluation (Hong, 2003). Thus, only 3 items (1 input and 2 outputs) were used in this study.

Among the 11 teams, Suwon Samsung (100%) and Daejeon Citizens (100%) came out to be the efficient teams while the remaining teams acquired efficiency rate as low as 37% (Buchon SK) to high as 84% (Pohang Steelers). Junam Dragons (75%),

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Oolsan Hyundai (73%), and Deagu FC (72%) came through in the range of low 70's and the rest Sunghwa (69%), Junbook Hyundai (68%), and Busan Icons (60%) came in the range of 60's, followed by Anyang LG (37%) with the lowest score. Meanwhile, there were teams which required as low as 15% (Pohang Steelers) to high as 63% (Buchon SK) input cut off to promote higher level of operation efficiency.

If we were to evaluate a sport team merely based on its financial status and its results from the games, than the rule of thumb is that the rich gets richer and the poor gets poorer. A team with tremendous deal of financial power will always buy-off the most profound players into becoming a franchise player and this in turn would get the wins from the games and the fans to the stadiums. However, DEA allows managers to optimize multiple inputs and outputs other than financial figures to manipulate a team's management performance to reach its maximum potential. The most excellent quality feature about evaluating sport teams by DEA is providing information on the quest for greater efficiency. It allows managers and decision makers to take account of all the important factors that affect a team's overall performance to provide a complete and comprehensive assessment of efficiency. As in our case, pro-soccer team managers would be provided with better knowledge and insight over their team's status by DEA evaluation, eventually leading them to make more refined decisions for optimizing the operation of the organization.