ABSTRACT

Cricket is a bat-and-ball team sport, played by two teams with eleven players on each side. Recently, a new format of cricket called ‘Twenty20’ (T20) was introduced, which has increased the excitement, fan following, and business opportunities in cricket. In 2008, Indian Premier League (IPL) was created with eight city-based franchises. Two more franchises were added in 2010. The focus of this case is on the selection of the playing eleven for the team Kolkata Knight Riders (KKR), the most valued brand name among IPL franchises. Thirty five players were on the KKR team roster in the first two editions of the IPL. Unlike many other sports, the playing eleven cannot be changed in a cricket game once the game starts. The case aims to strengthen students’ ability to mathematically formulate a real life “yes-or-no” type decision. Binary Integer Programming (BIP) is a suitable choice for modeling “yes-or-no” type decisions. The case, if provided with International Cricket Council (ICC) rankings data and in-house point system, will be appropriate for an undergraduate level management science/operations research class. The same case will be suitable at graduate level, if students are expected to gather ICC rankings data and build in-house point system. There are competing constraints that would lead to discussions about infeasibility. The case also points out the importance of interpretation of the solution and user friendliness of the model from an end user’s perspective.

Keywords: Binary Integer Programming (BIP), Cricket, Indian Premier League (IPL), International Cricket Council (ICC), Team Selection

INTRODUCTION

Shah Ruk Khan, a Bollywood actor and the owner of the Kolkata Knight Riders (KKR) cricket team, was disappointed by the dismal performance of his team at Indian Premier League in South Africa. To express his displeasure, he went back to India in the middle of the tournament and announced that he would not go back to South Africa until the team starts winning games. The situation worsened when the media raised issues about the playing eleven and possible biases in the choice of the playing eleven. In order to end the controversies and create positive attitude among the players for the next season, Shah Ruk Khan called for a meeting with his team director Joy Bhattacharjya to discuss about using scientific approaches in selecting the playing eleven. He wanted to select the best possible playing eleven to win the game that complies with the league’s team composition restrictions.

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Case:
Determining Playing Eleven of a Cricket Team

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Cricket Background

Cricket is a bat-and-ball team sport, which is played by two teams with eleven players in each team. The game originated in England and currently popular in Australia, Bangladesh, Bermuda, Canada, England, India, Ireland, Kenya, Netherlands, New Zealand, Pakistan, Scotland, Sri Lanka, South Africa, USA, West Indies (Caribbean Islands), and Zimbabwe. Apart from these countries, about 105 countries are members of International Cricket Council. Unlike many other sports, the team’s playing eleven cannot be intentionally altered in cricket once the game begins. If a player is injured, a substitute player can “field” and be a “runner” for the injured player. However, the substitute player cannot do the “batting” or “bowling” for the injured player. Hence, it is vital to choose the most suitable players before each game starts.

The original format of cricket, ‘test cricket’, spreads over five days with two innings for each team. It often ends in a tie between the teams. During late 1960s and early 1970s, a new format of cricket called ‘One Day International’ (ODI), which is about eight hours long, was introduced. ODIs brought excitement and a huge fan following to cricket in cricket-playing countries. Despite the significant reduction in playing time, ODIs were still considered longer when compared to many other sports. Recently, a new format called ‘Twenty20’ (T20) was introduced, which requires just about three hours of playing time. The T20 format has increased the excitement, the fan following, and business opportunities in cricket. T20 has created interest among cricket boards of different countries, including countries where cricket is not popular. Several of those countries are considering to start cricket leagues modeled along the lines of National Football League (American football) and English Football League (Soccer). American Premier League (USA), English Premier League (England), Indian Cricket League (India), and Indian Premier League (India) are some of the T20 leagues that have started or in the process of starting in the last three years. Among all the T20 leagues, Indian Premier League seems to have achieved the largest success in attracting a huge fan following at the arena and on the television.

Indian Premier League

In 2008, Indian Premier League (IPL) was created with eight city-based franchises. The eight franchises fetched US$ 723.59 million for the IPL in a bidding based sale of the franchises. Two more franchises were created in 2010, which were sold in a bidding process for US$ 703 million. The winning bidders included a mix of well known Indian businesses, businessmen, and Bollywood actors. Table 1 lists the team names, cities, owners, and winning bids of the IPL franchises. Even before the sale of franchises, the television rights for ten years were secured by Sony Television Network and Singapore-based World Sports Group for a whopping sum of US$ 1.026 billion. During the initial years, 80 percent of the revenue from the sale of television rights will go to the franchises. It will be gradually reduced down to 60 percent in the subsequent years. Apart from the television rights and franchise ownerships, IPL also fetched US$ 50 million from DLF limited, a leading real estate developer in India, for the title sponsorship. Hence, the league is formally known as the DLF Indian Premier League. Its brand value is estimated to be around US$ 4.25 billion. When player salaries are pro-rated, IPL is the second highest-paid league in the world, second only to the National Basketball Association (NBA) league in North America.

The focus of this case is on the selection of the playing eleven for the team KKR. Even though KKR is relatively inexpensive among all the franchises, it spent in excess of US$ 5 million - the maximum set limit - to buy internationally reputed players from different countries at player auction. Moreover, KKR was ranked the most valued brand name among the IPL teams. Hence, Shah Ruk Khan expected his team to perform at par with any other team in the league.
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