

Analysis of the Various Factors Influencing the Success of FRC Teams

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1 Introduction

FIRST Robotics Competition is a robotics competition in which teams of high schoolers build robots to compete in a game that is different every year.. FIRST is the organization that runs these competitions, and the acronym FIRST stands for “For the Inspiration and Recognition of Science and Technology.” Each year, FIRST reveals a new game in which alliances of 3 industrial-size robots compete against each other on a field to complete various tasks. Teams have limited time after “Kickoff” (the game reveal) to design, build, wire, and program their robot to perform the tasks required for the game. For example, in this year’s game, CHARGED UP, robots must travel across the field to the Substation Area to pick up one game piece (a cube or a cone) at a time and then travel back to their alliance’s Grid and deposit the pieces onto Nodes.

There are many factors that could have an effect on a team’s success. These include general things about the team, such as the team’s age, its budget, and its size, and also things about their robot in a specific season, such as drivetrain type and scoring capability. The goal of this research is to determine which of these factors have the greatest effect on a team’s success.

2 Literature Review

There is not much work that has been done on this topic. The most relevant paper that I could find was “An analysis of the Success of FRC Robotics Teams” by Max Tepermeister. Tepermeister found that team age had a small amount of correlation with success, while team budget and team size had no correlation with success. However, Tepermeister used OPR (offensive power rating) rather than win rate to measure a team’s success, which means that his results could be different from mine.