

Question 12.1

Describe a situation or problem from your job, everyday life, current events, etc., for which a design of experiments approach would be appropriate.

Suppose we are the record company running the hip-hop show Rhythm and Flow, we may want to know which candidate of the champion can bring greater benefits to the company, so that the record company will be able to cheat and manipulate the results of the competition behind the scenes.

Since we may have many potential championship candidates, and other candidates may also bring profit to the company, we don't want to lose value. In this case, we can use the Multi Armed Bandit approach. During the last episode before the final, the company can randomly ask an audience to buy virtual currency in order to show his or her support to one of the candidates. Then we can renew the score of this particular candidate, and ask another audience rating another candidate. First, every candidate has equal probability of selecting. But as we keep renewing each candidate's score, the probability of appearance of an individual candidate changes. Finally we are able to have the result of who is likely to be the best. Moreover, if every candidate have an equal probability of appearing, people are less likely to buy virtual currency to support a less popular candidate. Thus we successfully prevent losing money.