**Maru Batting Center I**

**Calculating Customer Lifetime Value and Performing Sensitivity Analysis**

Read the case “Maru Batting Center: Customer Lifetime Value”, and prepare a PowerPoint presentation based on your answers to the following questions.

1. Answer the questions on pages 5-6 of the case.

Notes:

a. When answering questions, ignore the specification that: “assuming that 100 percent of a customer segment will have experienced attrition once the net present value of annual profits per customer falls below ¥100.” Calculate CLV over an infinite time horizon. Does this assumption change results much? Why or why not? Reflect on the conditions under which it makes sense to use an infinite time horizon. Will this assumption ever lead to serious problems?

b. In class we introduced three different formulas that you can use to calculate CLV. You will need to choose one. Choose the one that you think makes the most sense for the business problem faced by management of Maru Batting Center, and be prepared to defend your choice in class. The first slide of your presentation should note your choice and reasoning process behind it.

2. Sensitivity Analysis: The case asks you to do CLV calculations based on numbers that are merely educated guesses, such as acquisition costs (based on estimated response rates), retention rates and annual margins. You will perform a sensitivity analysis to evaluate how estimated CLV changes when you vary these assumptions. You should do all analyses and plotting in R.

For this part of the assignment we will concentrate on the “Elite-Ballplayers (Party)” segment. The baseline assumptions for this segment are acquisition costs (ac) of 50,000, annual margins (am) of 30,000 and a retention rate (rr) of 0.6. (Note: for all analyses use an interest rate of 0.1 for discounting).

For each of the three variables (ac, am, ar) generate a vector of alternative values that differ from the assumed values in a reasonable way. The number of “scenarios” is up to you. Start with a small number, say four, to make the coding and interpretation easy, but write your code so it is easy to generate and analyze more scenarios later. So for instance you could test scenarios where the actual retention rate is 20% lower than expected, 10% lower than expect, 10% higher than expected, or 20% higher than expected.

Next, calculate CLV for every possible combination of scenario values. You should also include the original assumed values as one of the scenarios you calculate. If you have 4 possible new values for each variable, and the original assumed values, this should yield 5X5X5 =125 scenarios.

(Hint: The expand.grid function is useful for generating pairwise combinations of values)

Now do some analyses and visualization of your results. First calculate whether and how often the CLV is negative. Is it negative for plausible values of the variables? How often does the analysis yield a CLV that is lower than the one you calculated for Little Leaguers in part 1. Reflect on whether any of your conclusions from part 1 are different in light of the analysis. Do you have the same level of confidence in your conclusions? Why or why not?

Next plot how variations in each of the three variables changes CLV, holding the other two variables constant. One way to do this would be to create three line graphs, one for each variable. Each graph would show how varying the variable affects CLV, using the original assumed values for the other two variables. What do you notice about the shapes of these three graphs? Do all three variables behave in similar ways? Do some variables seem to be more important than others? What broad recommendations do these results imply for Maru Batting Center. What aspects of CLV would be most beneficial to focus on?