Rockgym

**Sample Only**

This document was submitted by students in a previous class. Their requirements were different from yours. We offer it only as a sample of what a project was for that class. Copying this document, in whole or in part, and submitting the result as your own work, would be a violation of the honor code.

User Guide

Version 5.0

**1. Location and meaning of input parameters and input streams**

The input parameters are found on the Parameters sheet. They are divided into six categories: costs, monthly ad costs, starting admissions, admission price, monthly quit rates, and expansion costs. The parameter names appear in column A. The user may change any parameters in the cells that are highlighted in green. Any changes made will affect the calculations on the last four sheets of the workbook.

Under *Costs* the user is able to keep track of monthly fixed costs incurred while running the business.

B4: utilities

B5: maintenance cost

B6: insurance cost

B7: rent

B8: miscellaneous expenses

B9: employee wages

B10: taxes

B11: upper management salaries

Under *Monthly Ad Costs*, the user can account for monthly variable costs.

B14: running radio ads

B15: running newspaper ads

Under *Starting Admissions*, the user can enter the number of monthly visitors.

B18: adult climbers

B19: student climbers

*Admission Price* shows the amount the gym charges the climbers.

B22: cost per visit for adults

B23: cost per visit for students

Under *Monthly Quit Rates*, the percentage of people who quit climbing each month can be entered in cells B26 and B 27 respectively.

The *Expansion Costs* in cell B30 are costs associated with opening additional locations to accommodate more climbers in the area.

The first three input streams can be found on the *Inputs* sheet. In cells B5 through M7, the user can indicate whether he/she is planning to do radio ads, newspaper ads, or expansion in the upcoming months. For advertising, 1 indicates yes and 0 indicates no. For expansion, the owner would enter the number of new location he/she plans to open in a particular month. For example, if the owner plans to run a radio ad in March, he/she would enter 1 in cell D5. If the owner decides not to do newspaper ads in January, he/she would enter 0 in cell B6. If he owner plans to open two new locations in March, he’d enter 2 in cell D7.

B5 through M5: the rock gym owner can indicate whether he plans to run radio ads and in which months.

B6 through M6: the rock gym owner can indicate whether he plans to run newspaper ads and in which months.

B7 through M7, the rock gym owner can indicate how many new locations he plans to open and in which months.

In the next input streams, under *Increases in Attendance Due to Advertising*, the user can also type in the appropriate effects of radio and newspaper advertising on adults and students by month.

B34 through M34: the impact of radio advertising on adult climbers expressed as a percentage

B35 through M35: the impact of radio advertising on student climbers expressed as a percentage

B36 through M36: the impact of newspaper advertising on adult climbers expressed as a percentage

B37 through M37: the impact of newspaper advertising on student climbers expressed as a percentage

**2. Location and meaning of outputs**

The outputs are found on five sheets of the workbook: Costs, Admissions, Income, Expansion, and Summary. In order to find out whether the gym can afford expansion, we look at how much it spends on fixed costs and advertising on the Costs sheet, how many climbers it accommodates on the Admissions sheet, and how much income it recognizes from admission prices and thus how much profit it generates each month on the Income sheet. The Expansion sheet answers the question whether the gym can afford to expand. Finally, the Summary sheet shows the most important calculations and the bottom line numbers: the cumulative profits after expansion.

The *Costs* sheet pulls information from the parameters and input streams entered by the user. First it calculates total fixed costs each month, then the variable costs or advertising costs each month. The two costs are then aggregated under Total Costs. The Fixed Costs are pulling information directly from cells B4 through B11 of the *Parameters* sheet and they are identical in each month. In line 13, the different costs are added up for every month and named TotalFixedCosts. Variable Costs are calculated by multiplying the number of ads in each month by the cost of advertising in cells B17 through M18 and are aggregated under TotalVariableCosts in line 19. Total Costs in line 23 are the sum of total fixed costs and total variable costs.

On the *Admissions* sheet we calculate the net number of climbers by taking into consideration that some people quit each month and that the number of climbers increases as a result of advertisements. In order to find the effects of a series of advertisements, we used convolution. In cells B5 through M6 we convolved radio ads and the increase in climbers due to radio advertising. In cells B10 through M11 we did the same for newspaper ads. Under the heading Increases, we calculated the number of adult and student climbers in each month. Cells B24 through C25 calculates how many climbers quit each month based on the quit rates entered by the user on the *Parameters* sheet. The quit rate is multiplied by the previous month’s attendance total to get the total number of quits. The net number of climbers each month can be seen in cells B29 through M20 divided between adults and students.

The *Income* sheet calculates the gym’s profits by subtracting total costs from total revenues. Revenues depend on the number of climbers each month calculated on the *Admissions* sheet and the admission prices charged that is set by the user on the *Parameters* sheet. Total revenues are in cells B7 through M7. Total costs in cells B11 through M11 are pulled from the *Costs* sheet. Monthly profits before expansion are total revenues minus total costs and can be found in cells B15 through M15. Cumulative profits are calculated in cells B16 through M16.

The *Expansions* sheet shows the monthly profits per month calculated in the *Income* sheet, whether or not the gym owner planned to expand based on the entries on the *Input* sheet, and the expansion costs. Cells B8 through M8 calculate monthly profits after expansion and cells B9 through M9 calculate cumulative profits, which will tell the owner whether he/she can afford to expand given the assumptions he/she entered in the green cells.

The *Summary* sheet aggregates final results from each output sheet so that the user doesn’t have to switch between the different tabs for the numbers. The user will see total costs, final adult and student admissions, monthly profits before expansion, cumulative profits before expansion, monthly profits after expansion, and cumulative profits after expansion.

**3. Guide to visual cues and naming conventions**

All data that the user can modify is segregated. They can be found on the following two sheets: Parameters and Inputs. Colors play a role in the model.

*Green*: information that the user of the model may edit

*Yellow*: calculated cells that are not used in the subsequent sheets

*Blue*: calculated cells that are referred to on the next sheets

*Orange*: the final output of the model that tells the user whether an expansion is affordable. This can be found on the Expansions sheet and the Summary sheet.

The *sheet names* are all alphabetic characters starting with an upper case letter followed by lower case letters. The sheet names are ten characters long or fewer.

We used *global names* for our variables so that we can refer to them on any worksheet within the workbook.

The *parameter names* are in mixed case so that each word component of it starts with an upper case letter followed by lower case letters. Parameter names are located directly to the left of the cell they refer to and are right aligned.

*Range names* are also in mixed case and located to the left of the range they refer to and are right aligned.

*Row captions* are left justified while column headings are centered.

*Numeric data* are right aligned.

*Currency numbers* are formatted as number using 1000 separator (,) without decimals indicated.

*Non-currencies* are formatted as number without using the 1000 separator and no decimals are indicated. *Percentages* are formatted as 10% with no decimal place.

**4. Step-by-step use of the model**

*Step 1:* go to the Parameters sheet and enter the costs associated with running the gym.

B4: enter utilities per month

B5: maintenance per month

B6: insurance per month

B7: rent per month

B8: miscellaneous expenses per month

B9: employee salaries per month

B10: taxes per month

B11: upper management salaries per month

*Step 2:* enter the monthly advertising costs.

B14: radio advertising cost

B15: newspaper advertising cost

*Step 3:* enter the number of adult and student climbers respectively that currently frequent the gym each month.

B18: adult climbers

B19: student climbers

*Step 4:* enter the amount you charge adults and students for climbing

B22: adult price

B23: student price

*Step 5*: Based on your experience enter the percentage of climbers who quit climbing after trying it out.

B26: percentage of adults quitting

B27: percentage of students quitting

*Step 6:* If you are thinking of expanding the gym by opening a new location in the area, enter the estimated cost associated with it.

B30: cost of expansion

*Step 7:* Once you changed the appropriate values on the Parameters sheet, click on the Inputs sheet. Here you can decide which month you would like to run a radio ad or a newspaper ad and how many new locations you plan to open. If you wish to run an ad, enter 1 into the appropriate cell, otherwise enter 0. In line 7, enter the number of new locations you wish to open.

B5 through M5: run a radio ad in each month or not

B6 through M6: run a newspaper ad in each month or not

B7 through M7: number of new locations in each month

*Step 8:* Under Increases in Attendance Due to Advertising, enter the increase of climbers as a percentage due to advertising. For example if you were to advertise in January you might see an increase of climbers in the first month but in the second month that increase will be less, until it disappears.

B12 through M12: impact of radio ad on adults

B13 through M13: impact of radio ad on students

B14 through M14: impact of newspaper ad on adults

B15 through M15: impact of newspaper ad on students

At this point you have entered all of the assumptions and the model will calculate your profits and whether you can afford to expand or not.

*Step 9:* The Costs and Admissions sheets are intermediary steps. They calculate total costs (line 23 on the Costs sheet) and the number of climbers (lines 29 and 30 on the Admissions sheet) based on the assumptions entered in the green cells.

*Step 10:* On the Income sheet you are able to see total revenues (line 7), total costs (line 11), and total profits before expansion (line 16).

*Step 11:* Your bottom line numbers are on the Expansions sheet in cells B9 through M9; the total profits after expansion. If the number is negative for a given month in this row 9, you are losing money, however if it’s positive you making a profit. If you have negative profits, you can go back to the Parameters and Input sheets and adjust admission prices for example. You will see that increasing this even only a little bit will yield a much higher profit. Or you can try to see how much effect advertising has on your profits. On the Inputs sheet you can also adjust the advertising campaign schedules or the expansion schedules to find out how that would affect profits.

*Step 12:* The Summary sheet lets you examine the final results from the intermediary steps as well as the bottom line figure. It shows total costs in line 5, final adult and student admissions in line 6 and 7, monthly profits before expansion in line 8, cumulative profits before expansion in line 9, monthly profits after expansion in line 10, and cumulative profits after expansion in line 11.