OPIM 5641 Business Decision Modeling – Final Project Proposal

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RENT or BUY ?

Problem Description:

Scott and four of her friends were looking for a 5-bedroom flat with at least 2 bathrooms. Scott would like to take a decision on whether to buy a house and rent it to her friends with the money she saved or rent along with her friends.

If Scott would like to BUY:

- She will be able to spend $55,000 or less for the down payment.
- Her parents would match her $25,000 if she bought a house.
- She would get 3-year closed mortgage with an interest rate of 3.95% with 20% down payment.
- The mortgage would be amortized monthly over 25 years.
- Annual Tax = 1.4427% * (Value of the house in previous year) -> Paid in installments
- Insurance would be $1200 annually.
- Maintenance cost would be $6000.
- Hydro and gas would be $100 and $30 with an increase of 50% in winter months and decrease of 50% in summer months.
- Water Heater Rental would be $120 every three months.
- Internet and Television would cost around $70 monthly for eight months.

If Scott would like to RENT:

In their search, they found two properties for renting. One with all the utilities included and the other one where she was responsible for paying the utilities. They chose these two houses because they don't want to pay more than $550.

Other:

- If she doesn't buy a house and opt for renting along with her friends, the money she saved would earn 1% interest sitting in her bank.
- House prices in London had been increasing by 2% annually.
- When she sold the property, the real estate agent would likely charge a 5% commission fee on the final price.

Problem Decisions:

- Find out whether buying or renting would be beneficial for Scott.
- If the final decision is to buy a house,
    - There is a need to figure out what Scott should charge as a rent and whether or not the price should include utilities?
    - Would managing the house costs outweigh any financial benefit?
- If the final decision is to rent a house,
    - Whether Scott and her friends should choose a property with or without utilities included?

Modelling methods we plan to use:

1. Base Case Analysis
2. Best or Worst Scenarios
3. Break-Even Analysis
4. Optimization Analysis
5. Sensitivity Analysis
6. Risk Analysis (Simulation)

Reference:

1. Harvard Business Review: A Student's Dilemma: Rent or Buy? by Mehmet Begen, Caitlin Neal, Sabriya Karim. https://store.hbr.org/product/a-student-s-dilemma-rent-or-buy/W14207