MSIN0094 First Assignment

Due 10 am, 29 Oct

1 Market Analysis

It was 6 months after Tom Cooper had conducted break-even analyses to decide whether to approve the left-digit bias pricing program and influencer marketing program at PineApple Inc. Tom had gone through quite some pressure recently: He miscalculated the payback period for the influencer marketing campaign due to his rusty knowledge of break-even analysis. As a consequence, PineApple Inc was unable to recover the initial marketing investment within 6 months and went bankrupt eventually. Tom really regretted not having gone all lengths for the Marketing Analytics module at UCL's BA program whereby he was supposed to review the lecture slides and practice the break-even analysis after class.

At this moment, Tom's priority is to secure a stable income source so that he could renew his expired Netflix subscription and finish the first season of Squid Game. Otherwise, he could not stop thinking about the destinies of those characters.

The first business idea coming to his mind is to set up a new bubble tea shop in Canary Wharf, which, he firmly believes, would have great business potential in the neighborhood. He still vividly remembered that the module leader for Marketing Analytics, who is a big fan of bubble teas, had been gaining weight each week. In the meantime,Tom understands that as the first step in a typical marketing process, he has to conduct a *market analysis* and analyze the economic and environmental factors that may affect a new bubble tea business.

Assignment Questions:

1. What factors are typically considered by marketing managers in the *market analysis*, i.e., the first step of a marketing process? (**5 pts**)

2. Briefly discuss each factor in the context of the new Bubble Tea business except "competitor". (2pts for each factor, **8 pts** in total; please properly reference any external sources if any.)

3. Please read Page 4, LBS Case 520-0109-5, and analyze the competitors for the new bubble tea business nearby One Canada Square. (**4 pts**)

- tips: you should discuss the direct/indirect/potential/non competitors for the new bubble tea shop

2 Customer Acquisition

The next step would be to evaluate the financial feasibility of the business. From the Marketing Analytics module, Tom learned that break-even analysis is a common tool for marketing managers to evaluate the financial feasibility of a marketing program. Nowadays, with better access to customer level data, marketing managers can calculate customer lifetime value (CLV) as a powerful tool to guide marketing decisions. Such calculations do not always require complex software applications; they simply require estimates of certain customer metrics, such as the cost of contact, the likelihood of purchase, the purchase margin, and the attrition (or conversely, retention) rate. A business can then make critical calculations about its target customers and the profit potential of various marketing efforts using this data.

Tom expects the bubble tea shop to cater to two primary segments of customers: (1) bubble tea enthusiasts like the module leader who would purchase regularly (hereinafter referred to as foodies), and (2) less frequent purchasers who may randomly drop in the store when they are nearby (hereinafter referred to as non-foodies).

Since this is a new business and Tom does not have existing data on local residents' preference for bubble tea, he is wondering how to reach out to customers in a more cost-effective way.

First, Tom can mail full-color bubble tea menus to randomly selected residents in the neighborhood. Each menu costs £0.8 to produce and £0.4 to mail through Royal Mail. Based on experience, such non-targeted lists generally result in a response rate of approximately 1.2%. That is, 1.2% of customers who receive an unsolicited ad leaflet in this manner will make a purchase.

Second, Tom is contemplating the purchase of a customer list from a Food & Beverage list broker for £1 per name. Tom's intent is to send potential bubble tea lovers on the list a full-color bubble tea menu. Based on experience, such targeted mailing can generally result in a higher response rate of approximately 2.5%.

Assignment Questions:

4. Compute the average customer acquisition costs for random blanket mailing. (**4pts**)

- Additional tips: do not directly use the raw numbers in the intermediate steps, but use variables to represent the values, as what we did in lecture slides.

5. Compute the average customer acquisition costs for targeted mailing if Tom buys the list from the list broker. (**4pts**)

6. Discuss the pros and cons of each acquisition method. (**6pts**; open question; your marks will depend on the quality of your discussion).

- Tips: Nothing is perfect; target marketing may also have its disadvantages. Think carefully about the potential limitations of target marketing if Tom decides to buy the name lists from list brokers. You can refer to online resources if necessary.

7. Discuss which acquisition method Tom should choose (**6pts**).

- Tips: Please take into account the pros and cons of each acquisition method in your discussion.

3 Customer Break-Even and Lifetime Value

Tom has tentatively determined to use the name list from the list broker; he can then determine the customer lifetime value to decide whether it would be profitable business to set up. To do the calculation, Tom gathers the following information based on a customer consumption survey conducted by a F&B marketing consultancy company:

Foodie customers purchase more frequently than non-foodie customers, making 10 purchases each month with an average order size of £8; non-foodie customers make 5 purchases per month with an average order size of £5. Additionally, foodies remain as customers longer, with a monthly retention rate of 95% (the percentage of customers who will continue to make purchases the following month) compared to 85% for non-foodies.

Finally, because foodie customers often choose to purchase the large size than non-foodie customers. This behavior results in a 45% COGS to Tom for non-foodies and a 60% COGS to Tom for foodies, due to the quantity discount effect.[1]

To compute the CLV, Tom collects the following additional information:

[1] A quantity discount is an incentive offered to a buyer that results in a decreased cost per unit of goods or materials when purchased in greater numbers/volumes. A quantity discount is often offered by sellers to entice customers to purchase in larger quantities.

- Since there are multiple competitors in the area including YiFang, T4, Lucky Tea and Chatime. Tom decides to take a conservative approach and consider 2 years as customer life. He also plans to book all revenues at the end of each month for the CLV calculation.
- Tom has checked with HSBC and confirms that the bank is willing to finance his business with a SME loan at an annual rate of 10%.
- Since bubble tea may have strong seasonality throughout the year, Tom decides to compute the future cash flows on a monthly basis.
- Other than the initial customer acquisition costs, Tom does not plan to invest in additional variable marketing costs in each period.

Assignment Questions:

8. Write a user defined function to compute CLV (2 pts each for correct `M`, `profit`, `profit_after_retention`, `profit_after_retention_discount`, and `CLV`; **10pts** in total). The notations are as follows:

- `N`: number of periods
- `COGS`: cost of goods sold
- `M`: profit each period from selling products
- `c`: variable marketing costs each period
- `g`: profit each period net of marketing costs
- `profit`: profit sequence for all periods
- `r`: retention rate
- `profit_after_retention`: profit sequence after applying retention rate
- `d`: discount factor
- `profit_after_retention_discount`: profit sequence after applying retention rate and discount factor

9. Use the `compute_CLV` function to compute the CLV for foodie customers (**4pts**). Discuss whether foodie customers are profitable to acquire (**4pts**).

10. Use the `compute_CLV` function to compute the CLV for non-foodie customers (**4pts**). Discuss whether non-foodie customers are profitable to acquire (**4pts**).

11. How much marketing cost at most should Tom invest in converting a non-foodie customer into a foodie customer (**2pts**)?

Tom is thinking about whether to launch a loyalty program for the bubble tea shop, where the customer can enjoy £4 off for every fifth order. This loyalty program is expected to increase the retention rate of customers. Tom would like to use randomized experiments to quantify the incremental impact of the program on customers' retention rate.

12. Design in detail an appropriate experiment proposal for Tom. (**15 pts**; the final marks will depend on the quality of your proposal)

    - Tips: Please follow the steps to run an experiment in Week 3.

After the randomized A-B testing, Tom finds that the loyalty program can increase the monthly retention rate of foodies to 96% and the monthly retention rate of non-foodies to 90%. On the other hand, customers do not change their shopping frequency or shopping basket, and only use the discount to top up more ingredients in the drinks.

13. Should Tom go ahead with the loyalty program for foodie customers? Show detailed computation steps to support your conclusion. (5pts for correct codes; 5pts for correct discussion; **10 pts** in total)

    - tips: treat the £4 off as the variable marketing costs in each period, so `c` is no longer 0.

14. Should Tom go ahead with the loyalty program for non-foodie customers? Show detailed computation steps to support your conclusion. (5pts for correct codes; 5pts for correct discussion; **10 pts** in total)

    - tips: treat the £4 off as the variable marketing costs in each period, so `c` is no longer 0.