DISC 212: Introduction to Management Science

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Group 10 Project Proposal: LUMS Campus Diet Plan Optimization

Problem Statement

LUMS is populated with a variety of on-campus dining options as well people from all walks of life. This means variations in pricings and cuisines from a supply-side standpoint and a mix of meal preferences and budgets from a consumer perspective. The goal of our project is to incorporate these variables and constraints to form a linear programming model that solves for an optimized meal plan depending on the daily budget and meal frequency of a consumer (either three or two daily meals). Our objective function represents the best use of a consumer's daily budget. Using tools provided in Excel, we will maximize our objective function in a way that provides a high utility meal plan by maximizing the use of the average daily student budget. To produce a meaningful meal plan, we will conduct a survey around LUMS to get a better understanding of a student's daily budget and the number of meals they consume.

Modelling Technique

This project will be a prescriptive model. The main constraint in our model will be the money the user has daily to spend on food. Other constraints may include meal frequency, cuisine preferences, amount of money they want to spend on a single meal, etc. The objective function represents the maximization of our user's budget and spends it based on the user's constraints.

Data Source(s)

Since our model is focused on the LUMS community, our meal options pricing data will be collected from the various menus of eateries scattered across LUMS. The data being sourced from these restaurants is publicly accessible and the fact that the menus are published by the restaurants themselves is a testament to its reliability and originality. Our decision variables will be the different meal variations. A survey will be conducted on the LUMS Discussion Forum to gauge the average daily budget of a student allotted to food consumption and the trend in meal frequency (whether two meals a day is more popular or are three daily meals more preferrable if they can be possibly adjusted in the provided budget). The meal options of the following restaurants will be considered in the analysis:

* Pepsi Dining Center (PDC)
* Zakir Tikka
* Jammin Java
* Green Olive
* Chop Chop
* Juice Zone
* Frooti
* The Bunker
* Subway
* Fusion Café
* Baradari Café
* Khokha
* Delish Pizza

Additional Details

We are tentatively considering incorporating the cuisine preferences of students (Chinese, Desi, etc.) in the decision analysis subject to the complexity of the model.