Universiti Teknologi MARA

Minimizing Cost in Order to Achieve Nutrition Needs Using Goal Programming: A Case Study in UiTM Perlis

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STUDENT'S DECLARATION

I certify that this report and the research to which it refers are the product of my own work and that any ideas or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline.

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ABSTRACT

Humans need to eat a good and balanced nutritious diet that provides calories for energy requirements and nutrients for proper growth, repair and maintenance of the body tissues. Today, busy lifestyle habits drastically changed the pattern of eating times where students are more likely to have irregular eating times and the cost for sufficient nutrient may be expensive to the students. Therefore, this study is conducted to find the minimum cost in order to obtain the daily nutrient requirements. Linear programming model is developed to get the minimum cost. To compare the model, goal programming model is presented. The cost of food is defined as the objective function for both optimization model. The data of price were collected from selected café in UiTM Perlis and the data of recommended daily nutrient intakes for 19-29 years old male and female were obtained from the Ministry of Health Malaysia. The sample used in this research consists of ten most frequently used food items as decision variables. To solve the model, QM for Windows V5 was used. Results are obtained in the form of a minimal cost that satisfy all the requirement of nutrients. Linear programming results, the minimum cost for male students is RM9.88 and for female students is RM9.10. Goal programming results, the cost is RM9.00 for both male and female students. Based on the findings of the study, goal programming model achieved the minimum cost and the food basket for male students consists of 410g of rice, 140g of chicken, 42.9g of broccoli and 252.7g of mushroom. Meanwhile, the food basket for female students consists of 429g of rice, 113.4g of chicken, 37.44g of broccoli and 321.3g of mushroom.

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