EBUY PROBLEM STATEMENT

Background:

There is a great emphasis that is placed on the procurement and purchasing in the businesses in the F&B industry. However, the procurement and purchasing are still mostly done in a traditional method of judgment by experience.

When the procurement is inaccurate in the quantity purchased it could cause:

1. The restaurants are not be able to produce the requested dishes to the customers due to the lack of ingredients, which in turn would decrease their revenue.
2. Due to the misjudged order quantity submitted by the restaurant, suppliers would have to replenish the required items raised by the customers which would increase the delivery cost.

For the calculation of product consumption, normally businesses would again, have to depend on their more experienced chef for their judgment and calculation so, in the event of staff turnover, there would be a heavy repercussion to the businesses. Due to not having a fixated way of finding out the product consumption, there is a high risk for chances for misappropriation to happen.

What we hope to bring to our users is a revolutionized way of smart ordering system, by utilizing machine learning and artificial intelligence to be able to provide our users with the accurate ordering amount based on historical database and assumptions made on the other factors that may contribute to the prediction.

Database Provided:

1. A Company with 3 restaurant outlets
2. 3 years' worth of purchasing and the sales record for each of the outlets (2018-2020)
3. The recommended amount of the raw materials needed for each dishes

Requirements:

1. Based on the database, create an algorithm that could provide an automated prediction for the purchasing needs of the outlets in real-time (calculate the **daily purchases quantities/amount total for each day**).
2. The differences between the predicted and actual purchase should not exceed 5%, at the same time, please also do explain the differences observed.
3. As the variables that are provided for this competition are kept at the bare minimum (for instance, we have excluded the different specifications for each product), what other factors do you think should be included to increase the correlation of the algorithm and why should you include them.

You must include all the requirements in your submission.

Additional Information:

Ebuy would disclose the sales data for the month of **December 2020** for the participants to match their predicted result. Tentatively, the Company would provide the total sales figure for the restaurant and the participants can use their devise algorithm to calculate the total purchase amount for the month.

Dataset:

Data Summary.docx	Summary of the data
Master Data (Purchase).xlsx	Purchase data for 3 outlets, from 2018/01 to 2020/11 (inclusive)
Master Data (Sales).xlsx	Sales data for 3 outlets, from 2018/01 to 2020/12 (inclusive)
Answer Sheet.xlsx	Participants are to fill in their predicted results in this Answer sheet. This Answer sheet **must be included in your submission**

Link 1 (Google Drive):
https://drive.google.com/file/d/1C9H87jMvwxGTMJF5KSIBcqAaLdzW_AHd/view
Link 2 (NTU Sharepoint):
https://entuedu-my.sharepoint.com/:u:/g/personal/tran0096_e_ntu_edu_sg/ER1LsJ_JiRFIlYOEXuaSvaUBgqsonMyBY16wxvqljzkC2w?e=tfYog1