**Case Study 2**

**Market Basket Analysis**

Conestoga College

Presented By: Vats Sanghvi

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# STATEMENT OF COMMITMENT TO ACADEMIC INTEGRITY

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* I confirm I have not received any unauthorized assistance in preparing for this assessment.
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By signing this form, I affirm my agreement to the above statements.

Vats 07-04-2024

Student Signature Date

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# Issues Exlanation

## Issue 4

4.1 Produce the Deliverable #4 Pivot Table:

Create a pivot table named "Issue 4 PT" from the UKP DM data, providing counts only analysis.

4.2 Document the DM, PT, and new WS:

Add sheet titles, dates, and source notes to the new sheet and PT and the new DM columns.

4.3 Plan to Produce for Deliverable #5:

Create a new WS "Issue 5 TPs" and strategize the production of deliverables for Issue #5.

4.4-4.8 Tasks related to creating 10 PTs from UKPDM and 13 PTs from All Imported Transactions:

Follow instructions to create necessary pivot tables with specified configurations.

## Issue 5

5.1 Produce the Deliverable #5 Pivot Tables:

Follow the strategy to create Pivot Tables of Total Transaction Counts and Quantities for other types of Sandwiches and Salads.

5.2 Document Issue #5 PTs:

Document the "Issue 5" Excel sheet and its many PTs, recording the work start and completion.

5.3 Summarize the 14 PTs:

Create a new WS "Heat Map" and summarize the PTs in a data table with specific columns and rows.

5.4-5.7 Tasks related to data summary, calculating affinity, and producing graphics:

Follow instructions to create necessary data summaries, calculate percentage differences, and produce graphics.

## Issue 6

6.1-6.4 Tasks related to submitting Week 12 draft, researching Market Basket Analysis, and building calculators:

Submit the Week 12 draft, research Market Basket Analysis, and build the Market Basket Calculator using provided resources.

## Issue 7

7.1-7.2 Tasks related to building the Market Basket Calculator and documenting it:

Copy the Market Basket Calculator, adjust it for the UKP and other items, and document the process.

8.1-8.6 Tasks related to producing and documenting Deliverable #6 Pivot Tables:

Plan, produce, and document the Pivot Tables for Deliverable #6 as instructed.

9.1-9.2 Tasks related to producing Deliverable #7 - Support, Confidence, and Lift:

Copy the Market Basket Generic sheet, create a new WS, and produce the required support, confidence, and lift values for the specified items.

# Summary / Conclusion

## Support

The number of transactions containing an itemset divided by the total number of transactions determines the frequency of an itemset in the dataset.   
  
It assists in locating itemsets that happen frequently enough to be deemed noteworthy or intriguing.

## Confidence

The number of transactions containing both the antecedent and consequent divided by the number of transactions containing just the antecedent determines the confidence level of an association rule.   
  
It is a representation of the conditional probability that the antecedent will occur and the consequent will occur.

## Lift

By comparing the observed support to what would be expected if the antecedent and consequent were independent, lift calculates the strength of an association rule.   
  
An antecedent and consequent tend to occur together more frequently than expected when the lift value is greater than 1.

# Recommendation

Given the strong correlations between sandwich types and salad purchases, the sandwich shop may want to consider combining deals or promotions that offer discounts when customers purchase a sandwich along with a salad. By encouraging customers to purchase both items at once, this tactic may take advantage of the observed purchasing patterns and boost overall sales as well as customer satisfaction. Additionally, the store could examine.