**Case study**

The café operates as a charming coffee shop known for its warm ambiance, friendly staff, and delicious coffee. The café offers a wide array of beverages, from classic espressos to specialty lattes, as well as a selection of fresh pastries and sandwiches to cater to the diverse tastes of its patrons. The coffee shop has established a loyal customer base, and people enjoy spending time there to socialize, work, or simply relax with a great cup of coffee. However, as more coffee chains and independent shops have opened in the area, the café has found it increasingly difficult to stand out and attract new customers. The coffee market has become saturated, and the local competition is fierce. The café's owner, Taylor, has noticed a decline in foot traffic and sales, and she's concerned about the future of her beloved establishment.

Taylor has decided to take a data-driven approach to address her business challenges. She's hired a data analyst to help her better understand the café's performance and uncover potential opportunities for growth. In this exercise, you'll need to apply the knowledge you’ve gained regarding the data analysis process and the best practices for each step, evaluating whether the data analyst has conducted a thorough and accurate data analysis process.

### Examine the steps performed in the data analysis process

#### **Stage 1: Data collection**

The data analyst started the data analysis process by gathering data from various sources, such as point-of-sale (POS) systems, customer feedback forms, online reviews, social media, and website analytics. They aimed to gather information on sales trends, customer demographics, preferences, and behavioral patterns. This data could, for example, allow the analyst to extract insights about the most popular beverages and food items, peak hours, and seasonal fluctuations.

#### **Stage 2: Data organization and cleaning**

After gathering the data from multiple sources, the data analyst carefully organized and cleaned the data in preparation for data analysis.

#### **Stage 3: Data analysis**

With clean datasets in hand, the data analyst began analyzing the data to uncover trends, patterns, and opportunities. The analyst aimed to identify the most profitable menu items, discovering the preferences of specific customer segments, and pinpointing the most effective marketing channels. They made use of statistical techniques to explore relationships between variables and gain valuable insights.

Here is a sample of the data insights gained through data analysis:

|  |  |
| --- | --- |
| **Data type** | **Data insights** |
| Customer data | * The primary customer demographic in the area has changed, with the café serving only a small segment of the possible customer audience. * There is a demand for more plant-based milk options. |
| Sales data | * Certain menu items are not selling well. * Plant-based milk options are limited and often out of stock. * There are patterns in the decline of sales, with sales dropping on weekdays and at various times of the day. |
| Competitor data | * Certain menu items are being sold at significantly higher price points   by competitors.   * Competitors focus more on short waiting times and takeaway offers.   They also have a stronger social media presence and offer electronic rewards systems. |

#### **Stage 4: Data visualization**

The analyst then went on to create charts, graphs, and dashboards based on their findings from the data analysis. For example, they created a bar chart comparing the sales performance of different menu items.

#### **Stage 5: Generating data-driven recommendations**

Based on the analysis, the data analyst then developed actionable recommendations to help the café improve its performance. The recommendations were supported by the data insights they gathered and tailored to address the café's unique challenges and opportunities.

#### **Stage 6: Implementing recommendations and monitoring results**

After making data-driven recommendations and giving Taylor the final report, the data analyst left the process of implementation to Taylor and her team, concluding the data analysis process.

## Evaluate the data analysis process

Once you have read through the data analysis process undertaken by the data analyst for the café, answer the questions that follow to evaluate the process:

### Data collection

1. The data analyst began the data analysis process by gathering data. What should data analysts do in preparation for data collection to ensure the effectiveness of the data analysis process?

Before collecting data, the data analyst should discuss with owner which data could be useful and need to analyze this project.

1. As a part of data collection, the data analyst gathered data from various sources. Why is this an important best practice?

Various sources will provide better understanding of this business and insights.

### Data organization and cleaning

1. Before proceeding with data analysis, the data analyst organized and cleaned the data. What is the purpose of this step in the data analysis process?

With well-cleaned and organized data, the data analyst will have no problem with any calculation or analysis process later. Low quality data occurs lots of errors in the process.

1. What are two common issues the data analyst may have encountered during the data organization and cleaning step?

I believe the data analyst could encounter data format(standardize) issue, duplicated data, empty cell and so on.

### Data analysis

1. Briefly discuss two data sources that the data analyst may have analyzed to generate the sample of insights.

Firstly, the data analyst would analyze the most ordered menu and ingredients. Secondly, the most crowed time and the worst crowed time.

### Data visualization

1. What is the role of visualizations in the data analysis process?

Visualization is a communication tool between data and stakeholders. It provides better understanding and insights instead of only tables and numbers.

### Generating data-driven recommendations

1. Data analysts make recommendations based on the insights gained during data analysis. Why are data-driven recommendations important for businesses like the café?

Data never tell lie. Data is a fact. At least, data-driven recommendation is much better than their instinct decision.

1. Based on the data insights gained, list two actionable data-driven recommendations you could make to help the café improve its foot traffic and sales.

Make a new plant-based milk related menu.

Decrease the unpopular menu’s stock and increase more related plant-based milk menu stock.

### Implementing the recommendations and monitoring the results

1. What should the data analyst have done during implementing recommendations and monitoring results step?

The data analyst should be monitoring the process of implementation and the outcome.

1. Why is the step of implementing recommendations and monitoring results important?

If it shows different result than we expected, they must make another decision or different approach way to analyze.

### Additional steps

1. An additional step is fostering a data-driven culture. How could the data analyst work with Taylor to promote a data-driven culture throughout the process? Why do you think this is important?

To ensure the café's success, the data analyst must collaborate closely with Taylor and her team, fostering a data-driven culture. This involves promoting open communication, teamwork, and continuous improvement, ensuring data insights guide decisions.

1. It is also important to monitor and evaluate the data analysis process itself. This can be done as a part of the overall process or as a separate step once it has ended. Why do you think it is important to evaluate whether a data analysis process is done correctly?

Evaluating the data analysis process ensures accurate insights for informed decisions and identifies improvement areas for future efficiency and effectiveness.