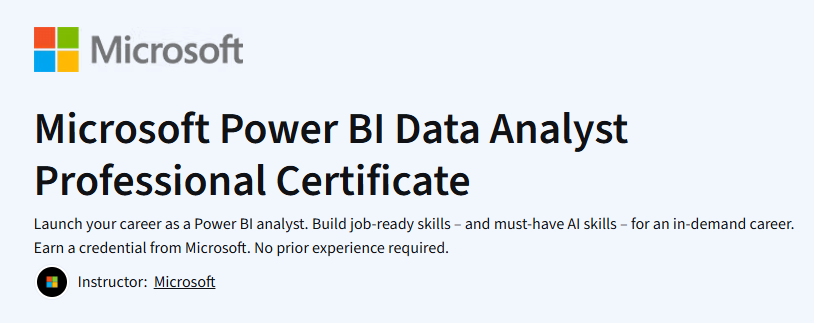
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**📊 Case study : Evaluating an Analysis Process**

Taylor owns a small, cozy neighborhood café known for its great coffee and friendly service. Recently, sales and foot traffic have dropped due to growing competition from nearby coffee shops. To solve this problem, Taylor hires a data analyst.

The analyst collects data from multiple sources like sales systems, customer feedback, social media, and online reviews. They clean and organize the data, then analyze it to discover trends and issues such as low weekday sales, limited plant-based options, and strong competitor strategies.

To help Taylor make informed decisions, the analyst creates visualizations and provides data-driven recommendations like expanding plant-based milk options, adjusting prices, and improving marketing. However, the analyst leaves implementation to Taylor without supporting ongoing monitoring or follow-up.

This case study shows how data analysis can help small businesses adapt to market changes and make smarter decisions to grow and succeed.

**Step 1: Data Collection**

**What Happened:**  
The analyst began by gathering data from multiple sources including:

* Point-of-Sale (POS) system

|  |
| --- |
| **Point of Sale (POS)** refers to the system or place where a customer completes a purchase like the cash register or checkout system in the café. It records sales transactions and often collects important data such as what items were sold, when, and for how much. This data is very useful for analysis. |

* Customer feedback forms
* Online reviews
* Social media platforms
* Website analytics

**Purpose:**  
To understand customer behavior, preferences, sales trends, and market position.

**Why It’s Important:**  
Collecting from diverse sources ensures a completer and more accurate picture of business challenges.

**Step 2: Data Organization and Cleaning**

**What Happened:**  
The analyst organized the collected data into usable formats and cleaned it by removing duplicates, correcting errors, and standardizing values.

**Purpose:**  
To prepare high-quality, accurate datasets for analysis.

**Common Issues Encountered:**

|  |  |
| --- | --- |
| **Issue** | **Explanation** |
| Missing values | Some customer data or feedback may be incomplete. |
| Inconsistent formats | Dates, product names, and locations may differ in format. |

**Step 3: Data Analysis**

**What Happened:**  
The analyst analyzed the cleaned data to identify:

* Customer behavior and demographics
* Peak and low sales periods
* Menu item performance
* Inventory issues (e.g., out-of-stock plant-based milk)
* Competitor pricing and marketing strategies

|  |  |
| --- | --- |
| **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. |

**Step 4: Data Visualization**

**What Happened:**  
The analyst created charts and dashboards to make findings easier to interpret:

* Bar charts comparing menu item sales
* Line graphs showing sales trends by day/week
* Pie charts for customer preferences

**Purpose:**  
To present data insights clearly for decision-making by non-technical users like Taylor.

**Step 5: Generating Data-Driven Recommendations**

**What Happened:**  
Based on the analysis, the analyst recommended:

* Introducing more plant-based milk options
* Adjusting prices for underperforming items
* Offering weekday promotions
* Improving social media marketing and reward programs

**Purpose:**  
To give Taylor practical, data-backed actions to improve sales and customer retention.

**Step 6: Implementation and Monitoring**

**What Happened:**  
The analyst completed the report and handed it over to Taylor. However, they did not stay involved in supporting the implementation or monitoring the results.

**What Should Have Happened:**

* Collaborate with Taylor during implementation
* Track performance post-recommendations
* Adjust strategy based on new data

**Additional Step: Fostering a Data-Driven Culture**

**Why It Matters:**

* Helps staff make decisions based on facts, not assumptions
* Encourages regular data use across operations

**Analyst's Role Could Have Been:**

* Training staff on using dashboards
* Helping Taylor build a habit of checking sales insights weekly

## **Summary Table: Analysis Process at Taylor’s Café**

|  |  |  |
| --- | --- | --- |
| **Stage** | **Completed?** | **Notes** |
| 1. Data Collection | ✅ | Gathered from multiple relevant sources |
| 2. Data Cleaning & Organizing | ✅ | Prepared high-quality data |
| 3. Data Analysis | ✅ | Identified key business issues and trends |
| 4. Data Visualization | ✅ | Created understandable charts and dashboards |
| 5. Recommendations | ✅ | Provided specific, data-driven suggestions |
| 6. Implementation & Monitoring | ❌ | No follow-up or ongoing performance tracking |
| 7. Fostering Data Culture | ❌ | Missed opportunity to promote long-term, data-informed decisions |

**Instructions: Evaluate the Data Analysis Process**

**Section 1: Data Collection**

1. **Preparation Before Collection**
   * What should data analysts do in preparation for data collection to ensure the effectiveness of the data analysis process?
2. **Using Multiple Data Sources**
   * As a part of data collection, the analyst gathered data from multiple sources. Why is this an important best practice?

**Section 2: Data Organization and Cleaning**

1. **Purpose of Cleaning Data**
   * What is the purpose of this step in the data analysis process?
2. **Common Issues Encountered**
   * What are two common issues the data analyst may have faced during this step?

**Section 3: Data Analysis**

1. **Analyzed Sources**
   * Briefly discuss two data sources that the analyst may have used to generate insights.

**Section 4: Data Visualization**

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

**Section 5: Generating Data-Driven Recommendations**

1. **Importance of Recommendations**
   * Why are data-driven recommendations important for businesses like the café?
2. **Actionable Insights**
   * Based on the data, list two specific recommendations that can help improve foot traffic and sales.

**Section 6: Implementing & Monitoring Recommendations**

1. **Analyst’s Role in Implementation**
   * What should the data analyst have done during the implementation and monitoring phase?
2. **Why Monitoring Matters**

* Why is this step crucial for the data analysis process?

**Section 7: Additional Steps**

1. **Fostering a Data-Driven Culture**

* How can the analyst work with Taylor to promote a culture of data use across the café operations? Why is this important?

1. **Evaluating the Analysis Process**

* Why should the data analysis process itself be reviewed or evaluated after completion?

**My Answer :**

**Section 1: Data Collection**

**1. Preparation Before Collection**

**Question:** What should data analysts do in preparation for data collection to ensure the effectiveness of the data analysis process?

**Answer:**  
Before collecting data, data analysts should first understand the goals of the business or the specific needs of the client or team. This includes identifying the key questions to answer, selecting relevant data sources, and assigning the right tools or platforms to collect and manage the data. Analysts should plan the process carefully, decide whether to use open-ended or structured questions (especially in surveys), and ensure every step is clear and purposeful. Most importantly, they must define a clear goal to stay focused throughout the data collection process.

**2. Using Multiple Data Sources**

**Question:** As a part of data collection, the analyst gathered data from multiple sources. Why is this an important best practice?

**Answer:**  
Using multiple data sources is the best practice because it provides a more complete and accurate view of the problem. It helps avoid errors caused by relying on limited or biased information. For example, checking sales data from the past two months alone might not reveal seasonal patterns that would be visible in one year of data. Collecting from diverse sources like customer feedback, sales reports, and social media allows for richer insights. However, analysts must be careful to filter out unrelated or low-quality data, as it can create confusion or reduce focus on the main objective.

**Section 2: Data Organization and Cleaning**

**3. Purpose of Cleaning Data**

**Question:** What is the purpose of this step in the data analysis process?

**Answer:**  
Cleaning data is one of the most essential steps in the analysis process because poor-quality data can lead to inaccurate results and misleading insights. For example, if a customer provides incomplete information in a survey (like missing address or age), and the analyst makes assumptions or ignores the error, this could create bias and ambiguity in the final analysis. If analysts skip data cleaning and jump directly to visualization or insights, the outcome will be flawed.

Think of it like the human brain: it receives a lot of ideas, but we must filter and choose the ones that are relevant. If we act on every random idea without clarity, it affects our decisions. Similarly, analysts must clean and organize the data to match the goal of the project. Especially when clients provide large and complex data, the analyst's job is to ensure only clean, relevant data is used.

**4. Common Issues Encountered**

**Question:** What are two common issues the data analyst may have encountered during the data cleaning step?

|  |  |
| --- | --- |
| **Issue** | **Explanation** |
| **1. Missing or Incomplete Data** | Many people fill out surveys or feedback forms carelessly. Some give full, useful responses; others leave key information blank. It becomes difficult to decide whether to keep or remove these records. One solution is to analyze what most respondents are saying and use that as a guide. |
| **2. Tool or Format Compatibility** | If the data comes in different formats (e.g., CSV, Excel, PDF), converting between tools can cause issues like unreadable values, broken formulas, or data corruption. Analysts must ensure compatibility and accuracy when importing or exporting file |

**Section 3: Data Analysis**

**5. Analyzed Sources**

**Question:** Briefly discuss two data sources that the analyst may have used to generate insights.

**Answer:**

1. **Social media**  
   Social media platforms are powerful sources of customer feedback. People often share their experiences, opinions, and suggestions on platforms like Instagram, Facebook, or Google Reviews. By analyzing these posts and comments, analysts can better understand customer preferences, satisfaction levels, and expectations. This helps businesses identify both strengths and areas for improvement.
2. **Café Workers (e.g., waiters, customer service staff)**  
   Employees who interact directly with customer-like waiters and cashiers are an excellent source of first-hand feedback. They observe customer behavior, hear complaints and compliments, and can often identify recurring issues or unmet needs. Their experiences offer practical insights that may not be captured in surveys or digital data, making them a valuable source for analysis.

**Section 4: Data Visualization**

**6. Role of Visuals**

**Question:** What is the role of visualizations in the data analysis process?

**Answer:**

The main role of visualizations in the data analysis process is to present complex and large datasets in a clear, simple, and easy-to-understand visual format. Visual tools such as **cards, maps, slicers, bar charts, and histograms** help highlight trends, patterns, and changes over time. Instead of reading long reports, stakeholders can quickly grasp key insights from one page of visuals. For example, a histogram can show increases or decreases in sales over time, while a map can display customer locations. Visualizations make communication faster and more effective.

**Section 5: Generating Data-Driven Recommendations**

**7. Importance of Recommendations**

**Question:** Why are data-driven recommendations important for businesses like the café?

**Answer:**  
Data-driven recommendations help businesses like the café understand their challenges, learn from their mistakes, and adapt to changes in the market. By analyzing customer behavior, preferences, and sales trends, the business can make informed decisions about what their customers want, what needs to improve, and how to move forward with confidence. These insights give the business a clear direction and help avoid guesswork.

**8. Actionable Insights**

**Question:** Based on the data, list two specific recommendations that can help improve foot traffic and sales.

**Answer:**

**• Offer weekday promotions**  
After analyzing sales data, the analyst found that sales drop on weekdays. A smart strategy is to create attractive weekday offers or loyalty programs to encourage repeat visits. Promotions must be clear and valuable for example, offering discounts on popular items or creating "buy one, get one" deals. In marketing, visuals and first impressions matter. If a promotion isn’t appealing at first glance, it likely won’t succeed. Just like a hedgehog looks cute but has hidden spikes, promotions should look good *and* deliver value.

**• Improve social media marketing and implement rewards programs**  
The data also showed competitors had stronger online presence and better reward systems. The café should improve its website, update its social media regularly, and launch a digital rewards program. For example, offer a free drink after five purchases or give a small gift when a customer spends over a certain amount. These incentives encourage loyalty and word-of-mouth promotion.

**Section 6: Implementing & Monitoring Recommendations**

**9. Analyst’s Role in Implementation**

**Question:** What should the data analyst have done during the implementation and monitoring phase?

**Answer:**  
The analyst should have supported Taylor through the implementation by guiding how to apply the recommendations step-by-step. They could help choose tools to monitor progress, set up dashboards, and track metrics like sales, customer feedback, or social media engagement. Even though Taylor runs the business, the analyst should stay involved to check if the recommendations are producing real changes and adjust if needed.

**10. Why Monitoring Matters**

**Question:** Why is this step crucial for the data analysis process?

**Answer:**  
Monitoring is the key to knowing if the plan works or not. If you just give advice and walk away, you can’t learn from the results or improve future analysis. Like in life you don’t just set a goal and forget it; you track your progress. Without this step, the café might repeat the same mistakes or miss new issues that show up after the changes

**Section 7: Additional Steps**

**11. Fostering a Data-Driven Culture**

**Question:** How can the analyst work with Taylor to promote a culture of data use across the café operations? Why is this important?

**Answer:**  
The analyst can train Taylor and her team to use data in daily decisions like checking which products sell best, tracking customer feedback weekly, or watching trends with visual dashboards. This helps the café team not just guess or act on emotion but use facts to guide their actions. It’s important because in today’s world, businesses that use data stay ahead, while others fall behind. A data-driven mindset helps everyone stay focused, improve performance, and make smarter decisions.

**12. Evaluating the Analysis Process**

**Question:** Why should the data analysis process itself be reviewed or evaluated after completion?

**Answer:**  
Evaluating the process helps the analyst learn what worked, what didn’t, and what could be better next time. Maybe the data sources weren’t clean, or maybe a step was skipped reviewing helps avoid those mistakes again. Sees like reviewing your exam after submission: you see where you lost points and improve next time. In data analysis, this reflection is how you grow and build trust with clients.