5.2. Student Handout

Power BI: Advanced Power Query & Sharing Insights - Student Handout

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1. Advanced Data Transformation Techniques in Power Query

Key Concepts:

- **Grouping Data:**
- Group sales data by region to analyze regional performance.
- Group customer data by age group to understand demographic trends.
- Group product data by category to identify top-performing categories.
- **Conditional Columns:**
- Create a column to label sales as "High" if above $10,000.
- Add a column to categorize customers as "Loyal" if they have made more than 5 purchases.
- Generate a column to mark orders as "Urgent" if the delivery date is within 3 days.
- **Custom Transformations:**
- Write a custom formula to calculate a discount based on purchase volume.
- Create a transformation to convert currency values using a custom exchange rate.
- Develop a logic to split full names into first and last names.

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2. Merging and Appending Queries

Key Concepts:

- **Merging Queries:**
- Combine customer and order tables using a common customer ID.
- Merge employee and department tables based on department ID.
- Integrate product and supplier tables using a product code.

- **Appending Queries:**
- Append sales data from Q1 and Q2 to create a half-year report.
- Stack data from multiple branches to form a company-wide dataset.
- Combine monthly expense reports into a yearly summary.

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3. Managing Large Datasets and Optimizing Performance

Key Concepts:

- **Reduce the Number of Columns:**
- Keep only essential columns like "Date," "Sales," and "Region" for analysis.
- Remove unnecessary columns such as "Middle Name" or "Fax Number."
- Focus on key metrics like "Revenue" and "Profit Margin."
- **Filter Data Early:**
- Filter sales data to include only the current year.
- Exclude inactive customers from the dataset.
- Limit product data to top 10 bestsellers.
- **Use Aggregations:**
- Load summarized data showing total sales per month.
- Aggregate customer data to show average purchase value.
- Summarize employee data to display total hours worked per department.

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4. Working with Advanced DAX Calculations

Key Concepts:

- **Calculated Columns:**
- Create a column for "Total Sales" by multiplying "Price" and "Quantity."
- Add a column for "Profit" by subtracting "Cost" from "Revenue."
- Generate a column for "Discounted Price" using a fixed discount rate.
- **Measures:**
- Develop a measure for "Average Sales" to analyze performance.
- Create a measure for "Total Revenue" that updates with filters.
- Implement a measure for "Customer Count" to track active customers.

5. Creating Advanced Measures and KPIs

Key Concepts:

- **KPIs:**
- Calculate "Profit Margin" as a KPI to assess financial health.
- Track "Customer Satisfaction Score" as a KPI for service quality.
- Measure "Sales Growth Rate" to evaluate business expansion.
- **Advanced Measures:**
- Create a measure for "Year-over-Year Sales Growth."
- Develop a measure for "Net Promoter Score" to gauge customer loyalty.
- Implement a measure for "Return on Investment" to assess project success.

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6. Using Time Intelligence Functions in DAX

Key Concepts:

- **DATEADD:**
- Compare current month sales to the same month last year.
- Analyze quarterly performance by shifting dates forward.
- Evaluate year-over-year growth using shifted date ranges.
- **TOTALYTD:**
- Calculate year-to-date sales for performance tracking.
- Summarize expenses from the start of the year to the current date.
- Aggregate customer acquisitions year-to-date.

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7. Sharing Reports and Dashboards in Power BI Service

Key Concepts:

- **Publishing Reports:**
- Publish a sales report to Power BI Service for team access.
- Upload a financial analysis report for stakeholder review.
- Share a customer insights report with the marketing team.

- **Creating Dashboards:**
- Pin key visuals from a sales report to a dashboard.
- Create a dashboard summarizing financial KPIs.
- Develop a dashboard highlighting customer satisfaction metrics.
- **Sharing Dashboards:**
- Share a sales performance dashboard with the sales team.
- Provide access to a financial dashboard for executives.
- Distribute a customer insights dashboard to the marketing department.

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8. Collaborating on Power BI Reports and Managing User Access

Key Concepts:

- **Workspaces:**
- Create a workspace for the sales team to collaborate on reports.
- Set up a workspace for the finance department to manage dashboards.
- Establish a workspace for cross-departmental project collaboration.
- **User Roles:**
- Assign "Viewer" role to stakeholders for report access.
- Grant "Contributor" role to team members for report editing.
- Designate "Admin" role to project leads for managing access.

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9. Power BI Workspaces, Apps, and Report Scheduling

Key Concepts:

- **Workspaces:**
- Use a workspace to organize reports for a marketing campaign.
- Collaborate on product development reports within a workspace.
- Manage HR analytics reports in a dedicated workspace.
- **Apps:**
- Create an app to distribute sales reports to the sales team.
- Develop an app for financial dashboards accessible to executives.
- Package customer insights reports into an app for the marketing team.

- **Report Scheduling:**
- Schedule daily refresh for sales data reports.
- Set up weekly updates for financial analysis reports.
- Automate monthly refresh for customer feedback dashboards.

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10. Hands-On: Publishing a Report and Sharing Insights with Power BI Service

Steps:

1. **Create a Report:**

- Design a report with sales data visuals and measures.
- Develop a financial analysis report with key metrics.
- Build a customer insights report with demographic data.

2. **Publish the Report:**

- Use Power BI Desktop to publish the sales report to Power BI Service.
- Upload the financial report for team access.
- Share the customer insights report with stakeholders.

3. **Create a Dashboard:**

- Pin visuals from the sales report to a new dashboard.
- Summarize financial KPIs in a dashboard.
- Highlight customer satisfaction metrics in a dashboard.

4. **Share the Dashboard:**

- Share the sales dashboard with the sales team.
- Provide access to the financial dashboard for executives.
- Distribute the customer insights dashboard to the marketing department.

By mastering these techniques, you'll be equipped to create impactful reports and dashboards that drive data-driven decisions.