Tableau Application

Masters of Professional Studies in Informatics, Northeastern University

ALY 6070: Communication and Visualization for Data Analytics

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1. Introduction

The dashboard was designed to provide a comprehensive analysis of user engagement, revenue distribution, and performance trends across various dimensions such as time, regions, and device categories. The primary goal was to answer critical business questions related to revenue generation, regional performance, and variability across device categories, while adhering to the principles of effective visualization design. The chosen visualizations—line and area charts, bar charts, pie charts, and box plots—are tailored to present the data clearly and meaningfully. These visualizations not only help identify key trends and patterns but also offer actionable insights to stakeholders for strategic decision-making.

1. Why did you choose the types of visualizations that you did?

The visualizations were selected to effectively analyze the dataset and address key business questions. Line and area charts were used to capture trends in sessions and transactions over time, providing an intuitive view of temporal patterns and highlighting significant events, such as holiday spikes. Bar charts were chosen to compare product revenue across regions and device categories, offering a clear way to assess contributions from different segments. The pie chart emphasizes the proportional revenue distribution across device categories, making it easy to identify dominant contributors at a glance. Finally, the box plot was included to highlight revenue variability across device categories, showcasing statistical patterns and outliers that may guide business decisions.

2. How are the visualizations effective and address the gestalt and design principles discussed in the course?

The visualizations adhere to gestalt principles and design best practices to maximize clarity and impact. Proximity is used to group related elements in bar charts and pie charts, ensuring ease of comparison. Similarity is evident in the consistent use of colors across device categories, creating a unified narrative. Continuity is leveraged in line and area charts, enabling smooth trend analysis over time. Additionally, the visualizations are enhanced by design principles such as clarity, where labels and axes are concise and easy to read, and color use, which is minimal yet impactful. The data-ink ratio remains high, with charts focusing on presenting data rather than unnecessary embellishments.

Interactivity, such as filters for region or device category, allows users to explore the dataset dynamically, making the dashboard adaptable to various analytical needs.

3. How do the visualizations answer the research/business question?

The visualizations answer critical business questions effectively. The line and area charts reveal trends in user engagement and transactions over time, enabling stakeholders to track performance and identify patterns such as seasonal peaks. Bar and pie charts provide insights into regional and device category contributions, highlighting the most profitable segments and devices driving revenue. These visualizations allow for actionable insights, such as focusing on regions or devices that outperform others. The box plot further answers questions about revenue variability, illustrating the spread of performance across device categories and identifying potential opportunities for optimization or growth. Together, these visualizations provide a well-rounded analysis of the dataset, addressing both high-level trends and granular details.

4. What story do the visualizations tell?

The dashboard tells a compelling story about user behavior, revenue generation, and variability. Temporal trends in sessions and transactions show stability with significant spikes during high-demand periods, such as promotional events. Regional and device-level visualizations highlight key revenue drivers, with desktops dominating revenue while mobile devices show potential for optimization due to higher variability. The box plot adds depth by uncovering statistical insights, such as outliers and the range of revenue performance across device categories. Overall, the visualizations collectively tell a cohesive story that equips stakeholders with actionable insights, helping them prioritize efforts to maximize engagement and revenue.

Conclusion

The The analysis revealed specific and actionable insights into user behavior and revenue performance. Temporal trends showed stable sessions throughout the year with notable transaction spikes during high-demand periods, such as promotional events. This indicates a strong correlation between seasonal activities and user engagement. Regional and device-level analyses identified desktops as the dominant contributor to revenue, with over 52% share, while mobile devices demonstrated potential for growth but displayed higher revenue variability.

The box plot highlighted that mobile revenue has a broader range, indicating variability across markets or user segments that warrants further exploration. Tablets, contributing the least revenue, may require strategic evaluation for improvement or de-prioritization. These insights provide stakeholders with a clear understanding of areas to prioritize, such as capitalizing on high-demand periods, optimizing mobile user experiences, and tailoring strategies for underperforming segments. The dashboard not only uncovers these patterns but also empowers decision-makers with a data-driven foundation to enhance engagement and revenue.

References

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- Knaflic, C. N. (2015). *Storytelling with Data: A Data Visualization Guide for Business Professionals*. Wiley.

Appendix:

Tableau Dashboard: