D210: Representation and Reporting

Performance Assessment – Task 1

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WGU MSDA

A. Interactive Data Dashboard

The Tableau workbook "D210_PA_LY.twbx" containing the dashboard named "Main Dashboard" is submitted alongside the report. Additionally, the dashboard can be found online at Tableau Public with the following link:
https://public.tableau.com/app/profile/leng.yang/viz/D210-Dashboard_17265141650540/MainDashboard?publish=yes

A1. Data Sets

Of WGU's provided data sets, the churn data set was used for this assessment. The external data set is submitted alongside the report as "telco_churn.csv." This data set was sourced from Kaggle by user BlastChar (2018). However, on Kaggle, the data originally came from one of IBM's sample data sets.

Also submitted alongside the report is a Jupyter notebook containing data cleaning and preparation steps of the data sets, named "D210_LY_Data_Cleaning.ipynb." Additionally, during data preparation, both data sets were merged. This merged data is also submitted alongside the report and named "merged_churn.csv."

A2. Installation Instructions

There are two options to view the dashboard. Below are the two options which will allow users to view the dashboard.

- The first option is the easiest and simplest and requires no installation as the dashboard can be viewed online by anyone. Below is the link to the dashboard.
    - https://public.tableau.com/app/profile/leng.yang/viz/D210-Dashboard_17265141650540/MainDashboard?publish=yes

- The second option requires the user to install Tableau Public onto their machine. Below are the steps guiding users who wish to follow this option.
    - The Tableau Public Desktop application can be downloaded at: https://www.tableau.com/products/public/download

- Fill out the required information or sign in, if already registered, and click the "Download the App" button.
- The download should begin automatically. If it doesn't, then select the version according to the user's current operating system.
- Go to where the file downloaded and open the installation wizard.
- Follow the installation instructions as prompted.
- Once installation is completed, launch the Tableau Public application.
- At the top select File > Open > then the "D210_PA_LY.tbwx" file.
- The dashboard will pop up. If not, select "Main Dashboard" from the tabs at the bottom.

A3. Navigation Instructions

The dashboard overviews customer subscription data between WGU and a competitor telecom company, IBM. The dashboard contains five different data representations and two filter controls. The two filters at the top can generate various customer base views. The "Churn" filter can filter views for customers who have churned and those who haven't. The "Gender" filter can filter views based on customer gender.

The data representation on the top left shows customer KPIs. The KPIs include the total number of customers, the average monthly cost, and customer tenure, with the value referring to the number of months. Clicking on either company will also filter for views specific to that company.

The following data representation below are pie charts containing proportions of the genders of the customer base for each company. Clicking on any of the slices will filter for views of customers with the corresponding gender and company.

The following data representation, on the bottom left, is a heatmap displaying the contract types and the number of customers under those contracts. The size of the proportions pertains to the number of customers under the specified contracts, with more enormous proportions meaning more customers. Clicking on any proportion will filter for views of customers under the corresponding contract type.

The following data representation, on the top right, displays a bar chart of the number of customers by tenure in months. For example, 773 customers have a tenure of 1 month. Additionally, clicking any of the bars will filter for views specific to the tenure length.

At the bottom right, the last data representation is another bar chart displaying the average monthly charges by tenure in months. Clicking on any of the bars will filter for views specific to the tenure length.

B. Panopto Storytelling with Data

The Panopto video can be found at:

https://wgu.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=ba71b82c-7f92-4213-b590-b1f0014ba7f3

C1. Dashboard Alignment

The dashboard allows stakeholders to look at high-level statistics of WGU's telecom customer data compared to those of a competitor company. As customer retention is essential for business, the dashboard allows for deeper insights into the background of customers who have churned. Additionally, including a competitor company provides for comparisons of company performance. In summary, the data on customer background and the ability to compare between companies allows for actionable insight to reduce churn and increase tenure in the process.

C2. Additional Data Set Insights

The additional data set contains variables that are the same or very similar. For example, the additional data set includes variables in the WGU churn data set such as internet service, phone services and multiple lines, online security, online backup, and others. These variables are also measured similarly using "Yes/No" responses. This similarity allows for direct comparisons between the two data sets, enhancing the insights that can be drawn versus drawing insights from one data set alone.

C3. Decision-Making Support

One data representation that supports decision-making is the KPIs table. The KPIs show calculated values of average monthly charge and average tenure. Both values provide insight into customer information. For example, WGU customers, on average, have longer tenure than IBM customers, but also seen is that WGU customers pay, on average, twice as much per month. The analysis from this representation can assist stakeholders in delving deeper into why customers stay longer with their services despite the higher charges.

Another data representation that supports decision-making is the heatmap containing the contract types and the number of customers under those contracts. Immediately, stakeholders can

identify which contract type is the most popular and the number of customers under those contracts. Also, when filtering for customers who churned, an overwhelming majority were under a month-to-month contract. This analysis can provide direction into different marketing strategies that could move customers into other contracts and assist in decreasing churn.

C4. Interactive Controls

One of the interactive controls is the “Churn” filter at the top of the dashboard. This filter selects customers that have either churned or not. Clicking on any option will change the data and view of all graphs and tables in the dashboard. This allows stakeholders to compare data and results between the two types of customers.

A second interactive control is the other filter for “Gender” at the top of the dashboard. This filter allows for multiple selections at once and can be used to compare results between the genders. Again, this filter will change the data and views of all graphs and tables in the dashboard.

C5. Colorblindness

To support colorblindness, colors that are bright and significantly different from each other were chosen. This can be seen in the gender pie charts, where the colors are drastically different and bright enough that each slice is distinguishable. Additionally, a green color was not chosen to avoid red-green colorblindness seen commonly in men.

C6. Data Representations

One data representation that supports the presentation is the KPIs table. The KPIs show calculated values of average monthly charge and average tenure. Both values provide insight into customer information. This highlights the comparisons of monthly customer charges and tenure between the companies, as mentioned in the presentation. Also highlighted are the KPIs of customers who churned and those who haven’t. This data reveals the differences between each customer type.

Another data representation that supports the presentation is the heatmap containing the contract types and the number of customers under those contracts. Immediately, stakeholders can identify which contract type is the most popular and the number of customers under those contracts. To support the presentation, filtering for customers who churned shows that an overwhelming majority were under a month-to-month contract. This analysis can provide

direction into different marketing strategies that could move customers into other contracts and assist in decreasing churn.

C7. Audience Analysis

The presentation was created with higher-level management in mind. Given the business in the schedules of these individuals, the visualizations were made simple and quickly interpretable. For example, it is immediately seen that most customers either have short or long tenure and that customers in these similar categories pay more for services than those with a medium tenure. Additionally, at a glance, most customers are under a month-to-month contract, and WGU customers are charged more monthly for services on average than the competitor. A last point of mention is that only essential and relevant points were made so as not to distract from the main point and not overwhelm the audience.

C8. Universal Access

One point of universal access is using a color palette accommodating colorblindness. One such example is using bright and distinguishing colors in the pie charts. Additionally, using a white background to account for a neutral environment allows users to focus solely on the visualizations without distractions. Lastly, by having the presentation on Tableau Public, anyone with internet access can view it without restrictions.

Additionally, the story can be accessed on Tableau Public at:
https://public.tableau.com/app/profile/leng.yang/viz/D210-Story/D210Story?publish=yes

C9. Effective Storytelling

One point of effective storytelling in the presentation utilizes Tableau's built-in Story sheet. This allows for creating story points in the presentation that have a beginning, middle, and end. This story structure engages the audience because they understand the narrative structure and will know when the presentation is ending.

Another point that aided in the storytelling was the use of interactive controls in both the filters and the graphs. These controls allow for the filtering of views specific to the relevant topic being talked about. This engages the audience as irrelevant information gets filtered out so they are not distracted and can focus only on what's in front of them.

D. Sources

BlastChar. (2018, February 23). *Telco Customer Churn*. Kaggle. https://www.kaggle.com/datasets/blastchar/telco-customer-churn