



**BERLIN SCHOOL OF
BUSINESS & INNOVATION**

**Essay / Assignment Title: Designing a sales dashboard in Tableau
for a chosen company**

Programme title: Visualization and Story Telling using Tableau

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Name and Surname (Capital letters):

MERVIN NESTER PEREIRA

Date: 23/12/2024

INTRODUCTION

The audience for our pizza sales dashboard is sales managers, the marketing team, the operational team and the responsible executives. With the help of our dashboard, the sales and marketing team will get high-quality insights for promotional actions and advertisements to done to increase sales. Our dashboard will help the product team to plan out the logistics.

KPIs are metrics which are used to track the trend of the business which help us to make well-informed decisions (K, 2022). KPIs will play a very important role in our dashboard to know about revenue generated from pizza sale, average expenditure of the customer per order, total pizzas purchased and pizza ordered on average per order.

We will need to find out the best selling and worst selling pizzas revenue. Also, other factors which are critical is the maximum number of pizzas ordered and the quantity sold of the pizza.

The goal is to know the peak time, this will help with more efficient management of resources. To understand the best-performing pizza to manage the resources and to know the worst-performing pizza for further improvements.

CHAPTER ONE: Problem Identification

Our goal through the sales dashboard is to focus on customer segmentation, trend identification and performance identification of all pizza products. Our dashboard will find out trends across multiple parameters which include pizza categories, sizes, revenue generation, and customer preferences. Our dashboard will also identify trends in sales and help the in-charge team to make decisions for improvement by visualizing KPIs like revenue, sales quantity etc.

Data Analytics and Business Intelligence Solutions

Data visualization converts raw sales data into interactive charts like bar charts, line charts, and many more. These interactive charts are brought together on a dashboard. These charts help the decision makers to know the state of the decision and make timely decisions.

With the help of trend analysis, the decision-makers can know the peak sales hours to manage the resources more efficiently. These trend charts also help decision makers to make the decision to promote a poorly performing pizza or discontinue it.

Segmenting data by pizza categories and pizza sizes helps to understand the behaviour and choices of the customer more in detail. This will help the decision-makers to make a marketing decision targeting to make maximum profit (Wilke, 2019).

Transforming data for insightful representation

Much of our data needs to be aggregated by time, pizza category and pizza size. This will help us to understand the important parameters like total sales, trends and orders. We will categorize our pizza based on revenue, quantity and number of orders. These segments will help decision-makers to know the main factors that are driving the performance. We will use visual representation which will help the decision-makers to quickly grasp the trends and patterns.

We going to use a concept known as Normalization. Normalization will allow us to convert our data into meaningful metrics like average pizzas sold. This helps us to know about customer behaviour and the quality of our product. Correlation analysis will help us to understand the relationship between discounts and profits. This helps us to know the effectiveness of discount strategies (Sleeper, 2018).

CHAPTER TWO: Solution finding

Data Analytics tool

For our assignment, we have used Tableau. We did so, as Tableau provides advanced options for data visualization and analytics and it performs better on large datasets as compared to PowerBI. Another advantage of tableau is, it is supported on multiple platforms like Windows and MacOS. Also, tableau has a larger community and extensive support resources (Datacamp, 2022).

How Tableau can help to gain insights from data

Interactive Data Visualization

Tableau visually expresses data by translating drag-and-drop actions into data queries (Tableau, n.d.). By using pizza dataset, tableau can generate bar charts, line graphs, pie charts and many more charts. This chart helps us to visualize the complex data in visually understandable format. For example, top and bottom 5 pizzas by revenue helps us to understand which pizzas are driving the sales and which are underperforming.

Dynamic KPIs

Tableau allows real-time monitoring of key performance indicators (KPIs) which include total revenue, average order value, total pizzas sold, total orders and average pizzas per order. This KPIs can filter data by time period, region and product category. This features helps decision-makers to focus on very important aspects (Meier, 2023).

Trend Analysis

With help of line chart or area chart, tableau can provide hourly or weekly visualization for pizzas sold and total orders. This can help decision-makers to know peak hours which will help them to make important decisions like planning of shift of employees, inventory management and resource management.

Segmentation and Categorization

Tableau provides a feature to divide data into segments like pizza category, pizza size or any other relevant segment. This helps us to know the most popular category of pizza. For example, the pizza category can be visualize through pie charts or stacked bar charts.

User-defined filters

Tableau has a very important feature of User-defined filters. Filters for time, region, and product categories can be used to achieve a highly customised view for our sales dashboard. This helps the decision-makers to focus on the very important aspects.

Integration with multiple sources

Tableau can easily work with multiple sources like Excel files, SQL databases and cloud services. This is very useful as it paves a way to connect our pizza dataset with datasets like customer feedback or inventory data.

Profitability Analysis

Tableau has very crucial features to get insights from sales and profit margins. For example, we can visualise the impacts of discounts on profitability. As, in past there were cases where providing significant discounts led to the organization making an overall loss. So, it is very important to know whether discounting strategies are useful or not (Murray, 2016).

CHAPTER THREE: DASHBOARD DESIGN

Best Visualization technique for each KPI

Total Revenue

Total revenue shows the total revenue generated by the selling of pizza. Total revenue is shown as a numeric display in our dashboard. It allows the decision-makers to view the exact total revenue in a clear and direct way. It provides only static numbers without a trend line which could offer insights of the trend being positive or negative.

Average Order Value, Total Pizzas Sold, Total Orders and Average Pizzas Per Order

Average order, Total Pizzas Sold, Total Orders and Average Pizzas Per Order are represented as numeric displays independently. They provide a single value for decision-makers independently. They do not offer trends or time series for more experienced users to show trends over time.

Total Orders and Total Pizzas Sold by Category

Total orders and total pizzas sold is represented by a butterfly chart. This chart provides a comparison of two metrics total orders and total pizzas sold across different categories of pizza. It compares two metrics in a balanced and mirror layout making it easier to compare values of each category. This helps the decision-makers to understand discrepancies or patterns between total orders and total pizzas sold. As it provides static values for each category, it avoids the complexity of time-based trends, focusing on immediate insights. Butterfly charts focus on categorical comparisons rather than changes over time. With a larger number of categories, the chart will become overcrowded and harder to interpret.

Top 5 Pizzas by Revenue, Total Orders and Quantity Sold

Top 5 Pizzas by Revenue, Total Orders and Quantity sold are represented using a horizontal bar charts. The pizza category is represented on the y-axis while quantity is represented by the length of the bar. The Bar chart ensures easy comparison of categories for ranking the pizza. Horizontal bars are more readable with longer product names. It may become hard to interpret the bar chart if there are too many categories.

Bottom 5 Pizzas by Revenue and Quantity Sold

Bottom 5 Pizzas by Revenue and Quantity Sold is represented using a horizontal bar chart. This chart easily interprets the understanding of underperforming pizzas. This chart also might attract unrequired attention to negative data unless until it is balanced with insights on why they performed poorly.

Hourly Trend for Total Orders

The x-axis represent hours of the day while y-axis represents total number of orders. Each bar represents the total orders for a given hour and bars is divided into colored segments for a specific pizza category. Bar-plot shows distribution of orders across each hour to get a insight of the busiest and least busiest hour. Bar segmentation represents which pizza category contribute the most to the total orders at different times of the day. Too many categories can make the plot very difficult to interpret. Bar plots are good in comparing hourly totals but they are not effective to show smooth trends as line charts.

Weekly Trend for Total Orders

The x-axis represents week number and y-axis represents total number of orders in that week. A single line is used to represent total number of orders each week showing trend over time. Our plot also highlights the minimum, maximum and average number of orders on our line chart. Line plots represent the graphs over a time showing the trends which makes easy to identify patterns such as increase or decrease in orders. The maximum and minimum points represents the highest and lowest points of sales during the year. If multiple lines are plotted then this can create confusion. Line plots focus on trends and don't segment data into specific category.

Percentage of Sales by Pizza Category

Percentage of Sales by Pizza Category is represented by donut chart. A donut chart is a circular chart with a whole in between. Each segment represents a category and the size of the segment depends on the total sales in that region. This chart represents different pizza categories. The total sales figure is represented at the centre of the chart. The Donut chart represents the proportion of each pizza category relative to total sales. The space in the centre of chart provides space for additional information without any cluttering. If the segments are smaller then

they are very hard to compare with each other. If there are a large number of categories then it gives a issue of readability.

Percentage of Sales by Pizza Size

Percentage of Sales by Pizza Size is represented by a bar plot with a slider. In our bar plot, the y-axis represents pizza size and the x-axis is the sales of the pizza by its size. Bar-plot provides an easy way to compare the sizes of different pizzas. Sliders add an interactive feature allowing users to explore different sales filters. For too many sizes, bar plots can take more space than pie plots. Sliders can lead to making the bar plot more complex.

Schematic of our predesigned dashboard

The schematic of our predesigned dashboard is the layout which we have planned. The goal of the schematic to get a clear idea of our dashboard in our mind before designing it.

Components of the dashboard schematic

The header section has a date range filter and title. We have charts and graphs showing visualization using line charts, bar-plot and donut plot. We have data filters to slide date and drop-down to filter out data by pizza category. KPIs displays boxes with metrics like total revenue, average order value, total pizzas sold, total orders and average pizza per order. We have interactive element like slider to adjust date. We have button to switch between dashboards (Geckoboard, 2020).

Snapshots of predesigned sheets

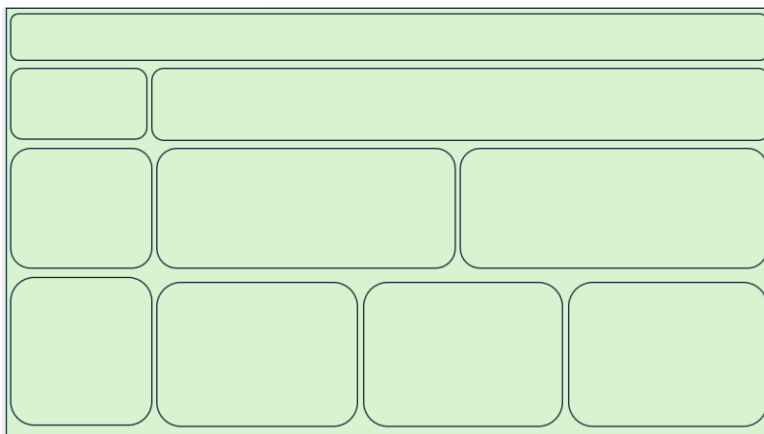


Figure 1: Dashboard 1 & 2 layout

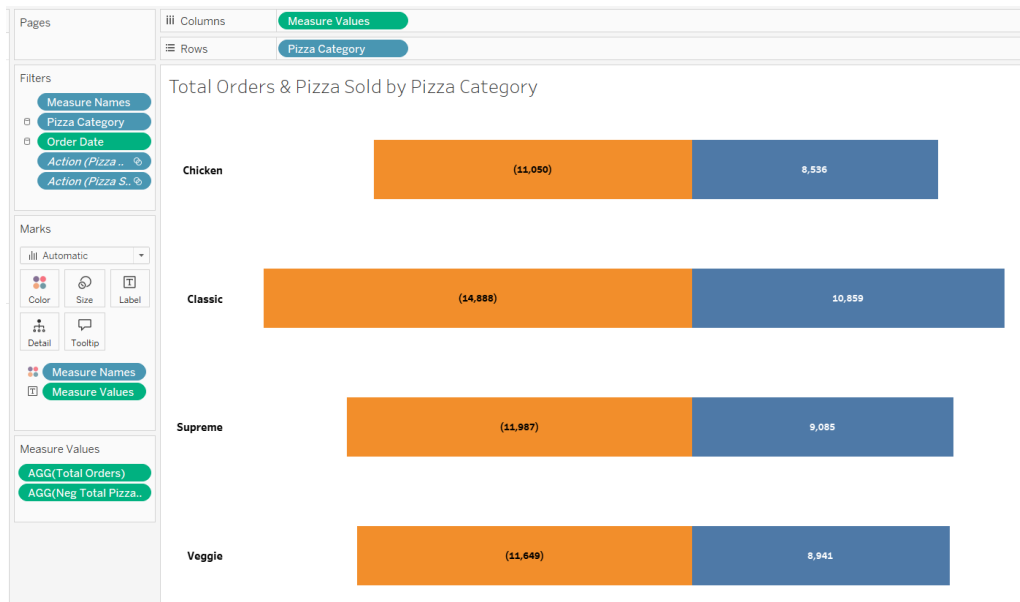


Figure 2: Total orders & pizza sold by pizza category

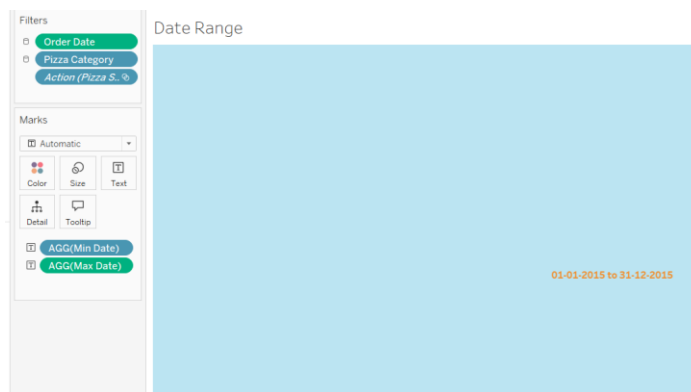


Figure 3: Date Range

Top 5 pizza's by revenue

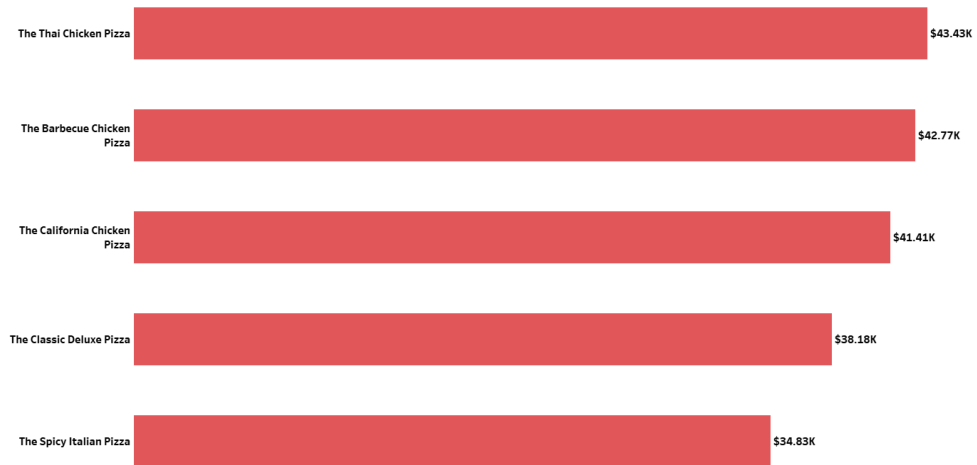


Figure 4: Top 5 pizzas by revenue

Bottom 5 pizzas by revenue

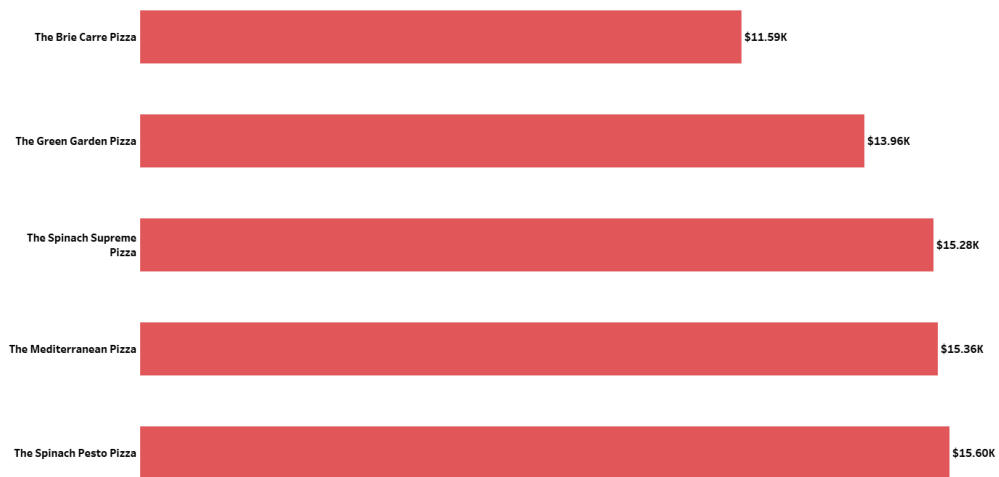


Figure 5: Bottom 5 pizzas by revenue

Top 5 pizza's sold by quantity



Figure 6: Top 5 pizza's sold by quantity

Top 5 pizza's sold by total orders



Figure 7: Top 5 pizzas sold by orders

Bottom 5 pizza's sold by quantity



Figure 8: Bottom 5 pizzas by quantity

KPI Banner

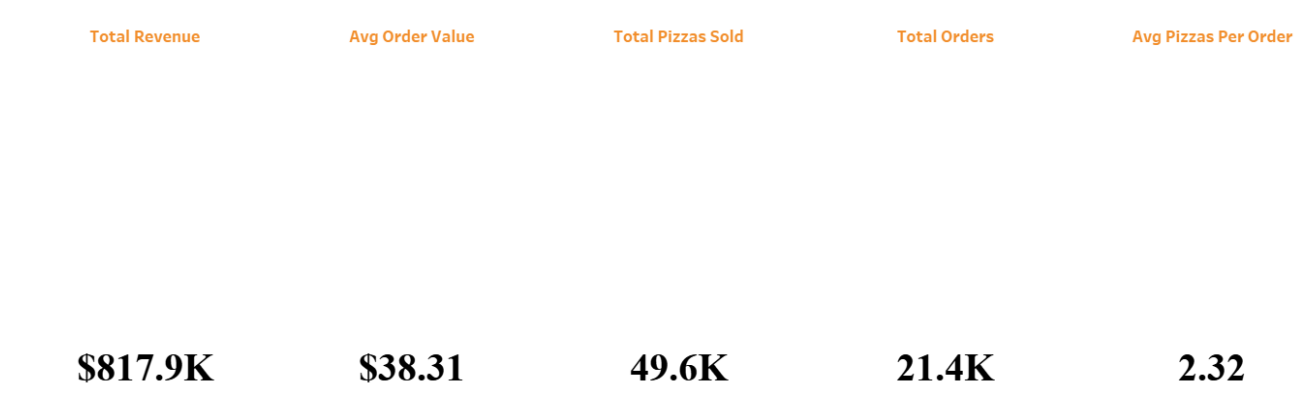


Figure 9: KPI Banner

Hourly Trend for Total Pizzas Sold

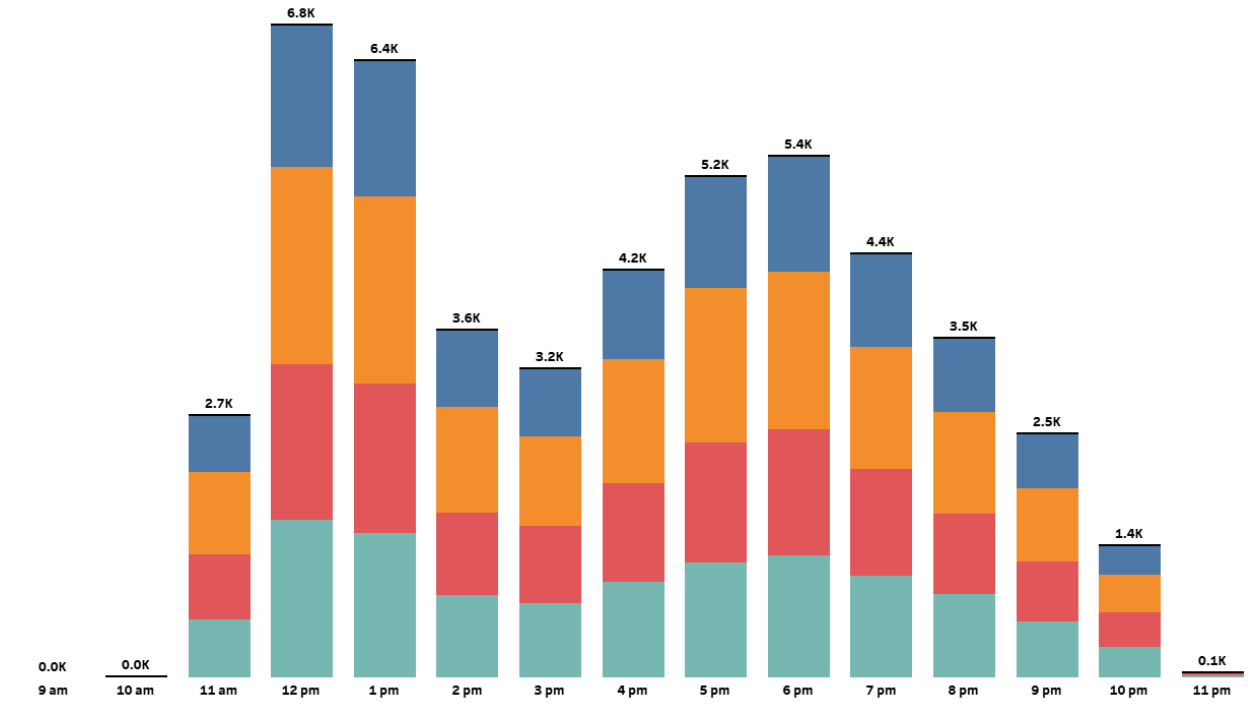


Figure 10: Hourly trend for total pizza's sold

Weekly Trend for Total Orders

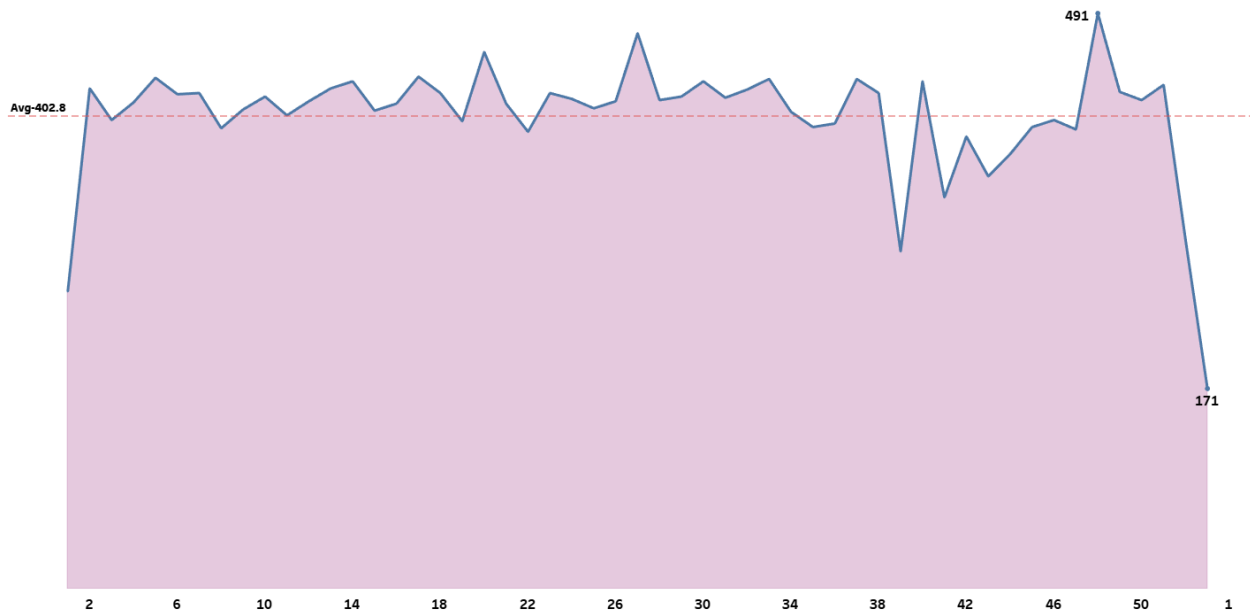


Figure 11: Weekly trend for total orders

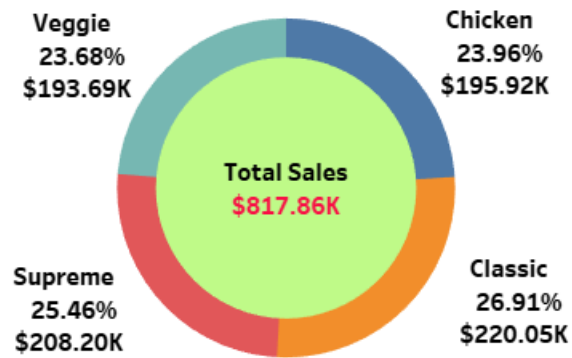


Figure 12: Percentage of sales by Pizza Category

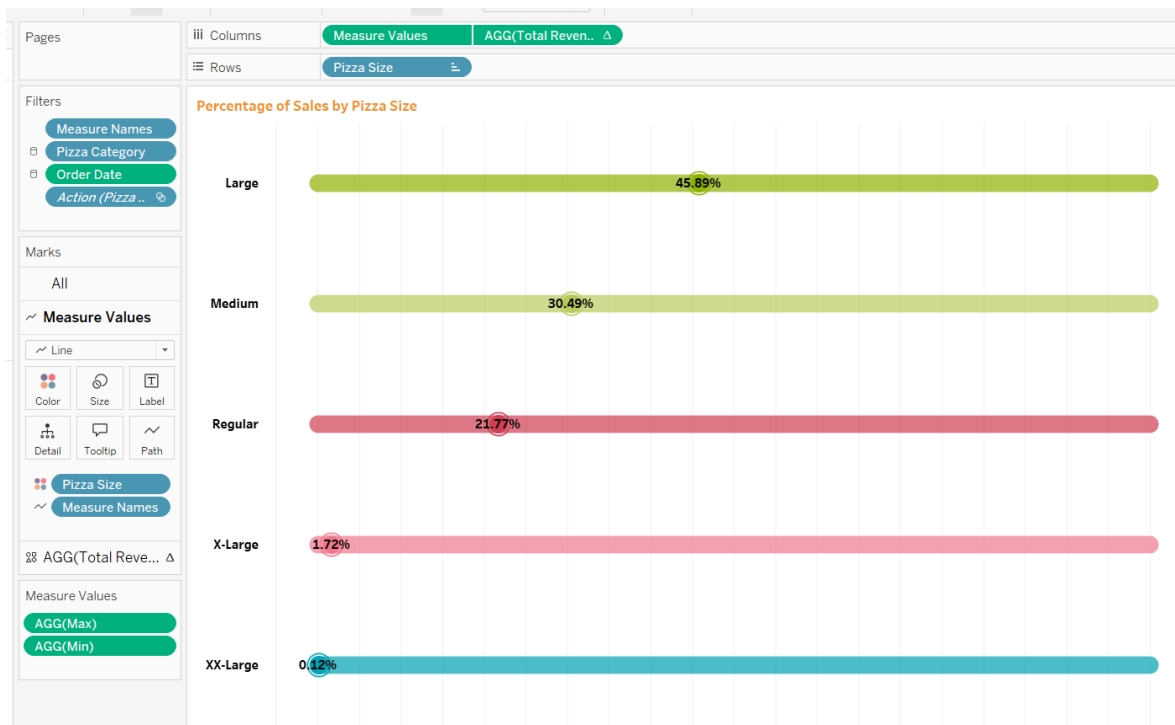


Figure 13: Percentage of sales by pizza size

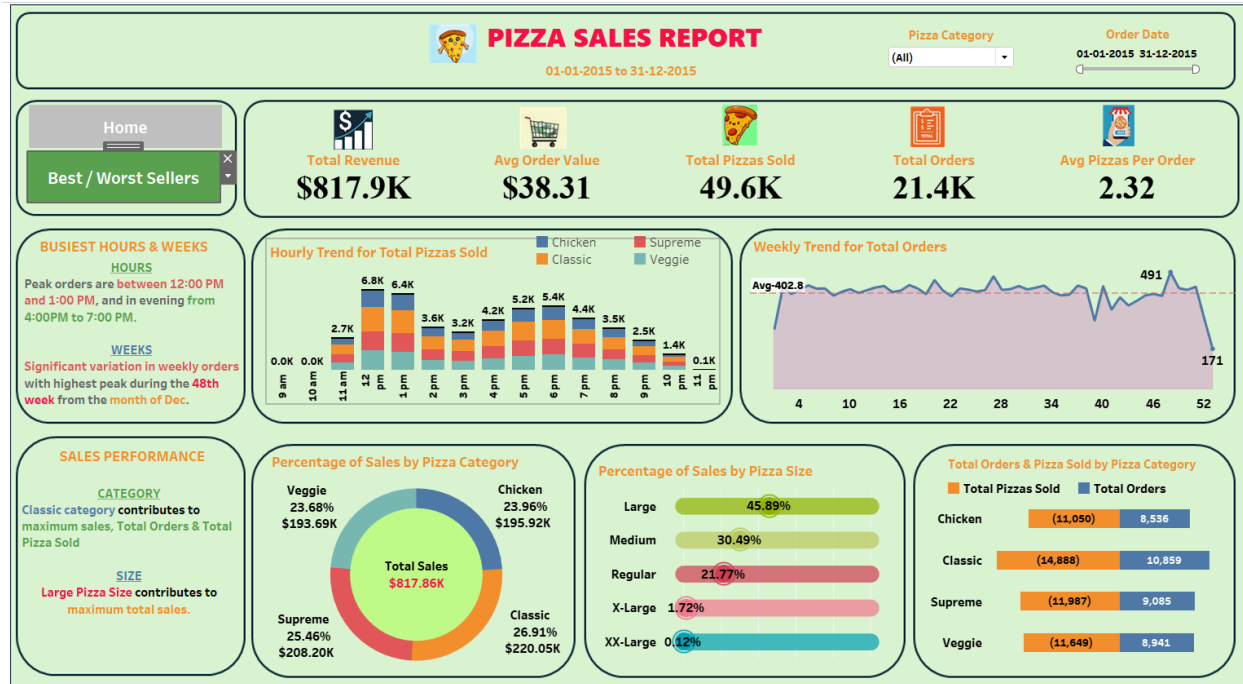


Figure 14: Dashboard 1

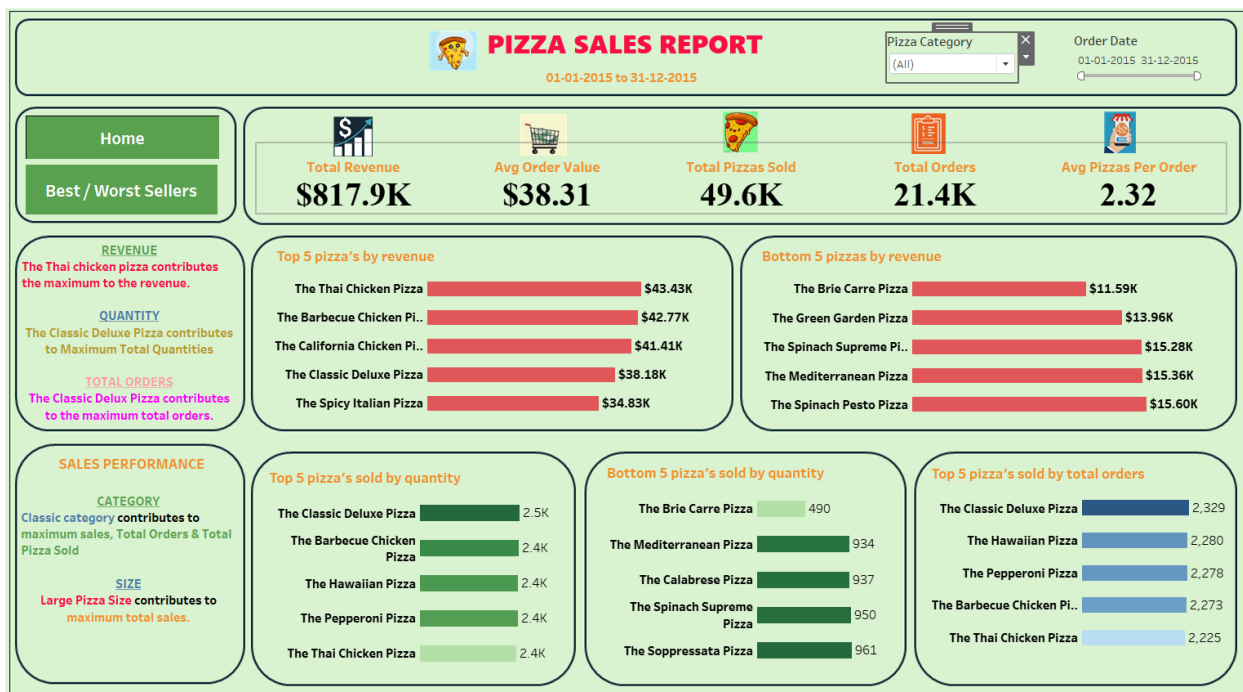


Figure 15: Dashboard 2

Visual Elements

Visual elements that can enhance the dashboard are as follows

Consistent layout and Spacing

Every KPI must be in the independent box. Also, in between every KPI, there should be equal spacing to avoid it looking messy. The filters, dropdown buttons and other buttons must have a consistent layout.

Use of Icons

KPI must have icon signs next to it, which makes it more interactive. Example: Total Revenue KPI must have an icon like a dollar sign.

Tooltips

We should keep the tooltip on graphs enabled, so when user hovers over the graph then more context is shown. Example: barplot for hourly pizzas sold. Our tooltip will display the exact number of pizzas sold in that hour.

Interactive filters and highlights

When the user selects a particular filter, we should use visual highlight so that the user knows how their selection affects other metrics on the dashboard.

Minimal Gridlines and Borders

Make sure that gridlines and borderlines are shown in the graph, only if they are necessary.

Color Scheme

Colors for Categories

We should use distinct and contrasting colors for each pizza category which helps to differentiate across visualization.

Neutral Background

We should use light colored background to make graphs, KPIs and charts stand out. This boosts readability and helps gain attention to the important portion of data

Colors for KPI

We should use consistent colors for KPI for total revenue we should use green color suggesting growth of revenue.

Highlight best seller/ worst seller barplot

We use green color for best seller suggesting a increase in revenue while red color for worst seller suggesting a decline (Loth, 2017).

CHAPTER FOUR: DISCUSSION

Superiors of the solutions

Clarity and Readability

Our dashboard must have clarity using a clean layout, distinct charts for KPI and well-aligned charts. Our fonts must be simple, with minimal gridlines and we have to make sure that users can interpret data quickly.

Consistent color scheme

Use of proper consistent colour schemes makes sure that users can easily distinguish between pizza categories across different charts.

Interactivity

Dropdowns for pizza categories, and a date slider allow users to view specific segments of data and get insights.

Data Driven decision making

The KPIs and visualizations makes sure that our dashboard is not only static presentation of data but a tool to make informed decisions.

Thorough Insights

The “Best/Worst” sellers makes the job of responsible team easy to high and low selling pizzas (Murray, 2016)..

Limitation of solutions

Reliance on Visual Complexity

In the dashboard, there are many charts which can make it difficult for users who are not familiar with data interpretation. For example: Too many charts can confuse a user if they don't understand each charts function or interpretation.

Potential of Information Overload

If there are a lot of charts that means there is a lot of information available. However, some users may not require all KPIs or visualizations as they might get lost in less relevant information.

Lack of granular segmentation

The current dropdown of the pizza category does not allow further segmentation such as toppings. This limits the depth of analysis.

Limited Historical context

Our dashboard focuses on sales for the year 2015. This might not be sufficient to understand long-term trends and predict the future.

Lack of Predictive Analysis

The dashboard does not have elements like forecasting future sales.

Idea for further improvement

Enhanced data granularity and Segmentation

Introduce additional filters for segmentation, such as pizza toppings, geographical sales regions, promotional sales (e.g., buy-one-get-one deals), or customer demographics. This would provide more detailed insights.

Historical Data and Forecasting

Adding historical data comparison (e.g., comparing 2015 to 2014 or Q1 vs Q2) to give users more context on performance trends.

Storytelling

To avoid information overload, consider using a storytelling format where key insights are highlighted.

Customer Feedback

We should consider taking customer feedback in our dashboard to customer satisfaction. This can help the team correlate pizza popularity with sales.

CONCLUDING REMARKS

We have focused on financial metrics KPIs such as total revenue, average order value, total pizzas sold and total orders. This will help the responsible team in the organization to get insights of sales to make business critical decisions.

We have used charts like “Best and Worst Pizza Sellers” to gain insights into sales trends. It will help us to know the top-performing and low-performing pizzas to make important decisions to boost sales. A few limitations are a lack of deeper segmentation and predictive analysis. By addressing this limitation, we can develop this dashboard into the more powerful and excellent dashboard for decision-making.

To conclude, our dashboard is functionally and visually excellent. Our dashboard offers excellent insights of sales and other different parameters mentioned in this assignment.

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