

JASON CHANG

PROJECT PORTFOLIO

SENIOR DATA ANALYST



Irvine CA

JASON CHANG

SENIOR DATA ANALYST

CONTENT

- [DATA ANALYTICS / ENGAGEMENT & MONETIZATION STRATEGIES](#)
- [DASHBOARD / EXECUTIVE BUSINESS INSIGHTS](#)
- [DATA ANALYSIS / WAREHOUSE & GL ACCOUNT OPTIMIZATION](#)
- [PROCESS AUTOMATION / QUARTERLY ROYALTY MANAGEMENT](#)
- [SCOPE OF SKILLS](#)



DATA ANALYTICS

DATA SCIENCE

DATA ANALYTICS / ENGAGEMENT & MONETIZATION STRATEGIES

Background:

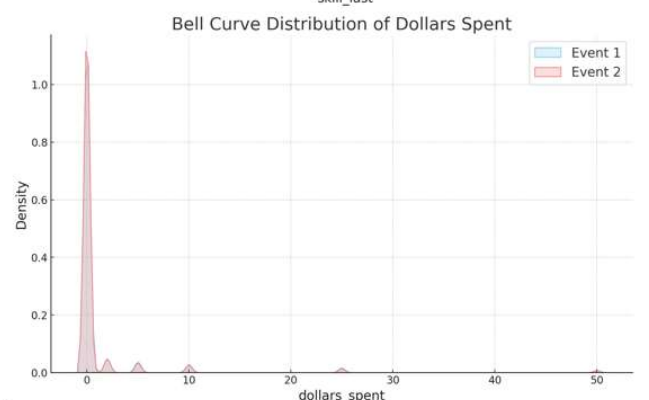
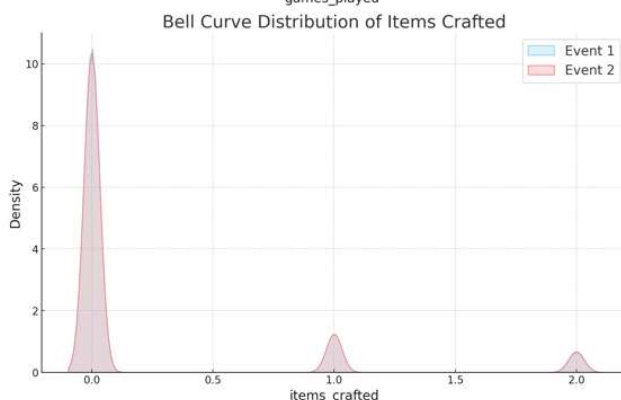
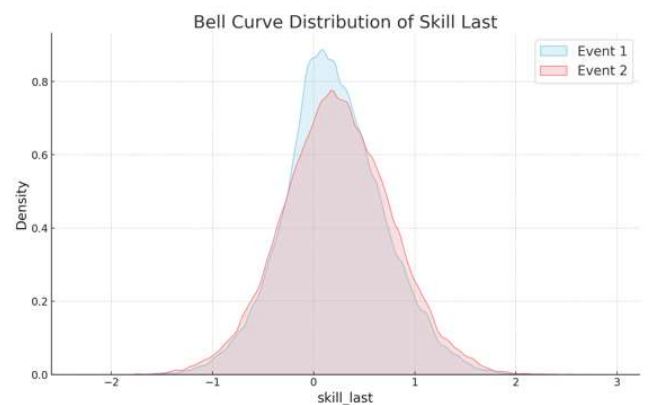
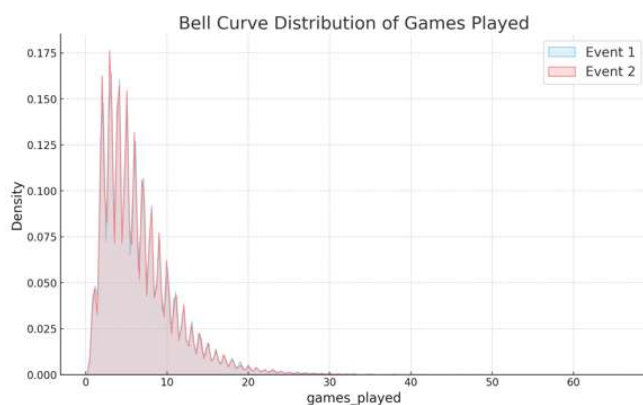
Centered around Warcraft's 2 in-game events, with a focus on understanding and improving monetization strategies. The project includes the analysis of current inefficiency in player engagement metrics and measure the impact of changes on revenue generation.

Executive Summary/Business Objective:

The goal is to leverage data-driven insights to enhance the performance of Warcraft's in-game events. By analyzing player behavior and spending patterns, aim to identify strategies that will maximize revenue while enhancing player engagement and satisfaction.

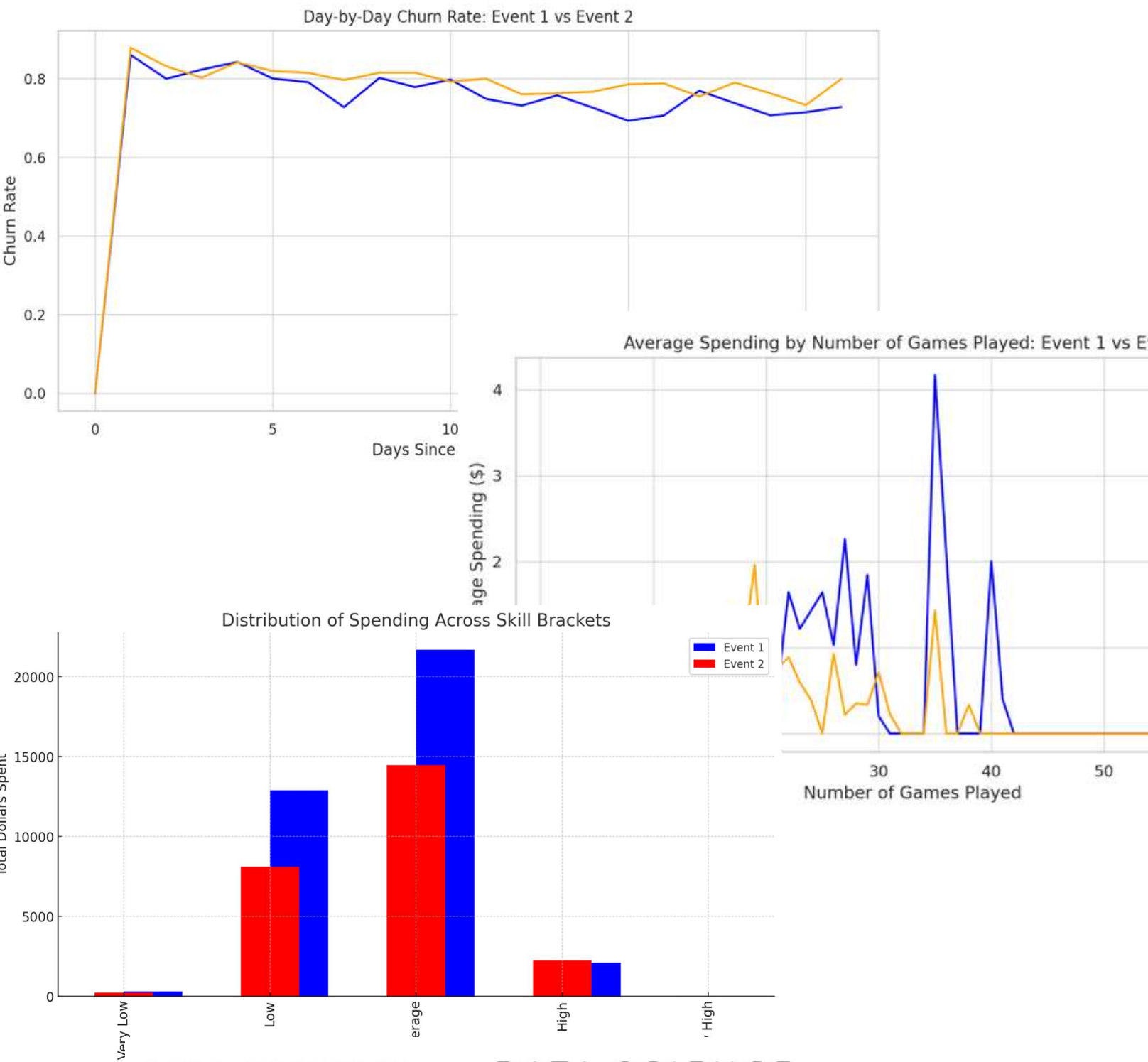
Data Exploration:

Embarked on a Descriptive exploration of our data to understand player spending behavior during these events. This involves delving into metrics such as games played, skill levels, dollars spent, and items crafted.

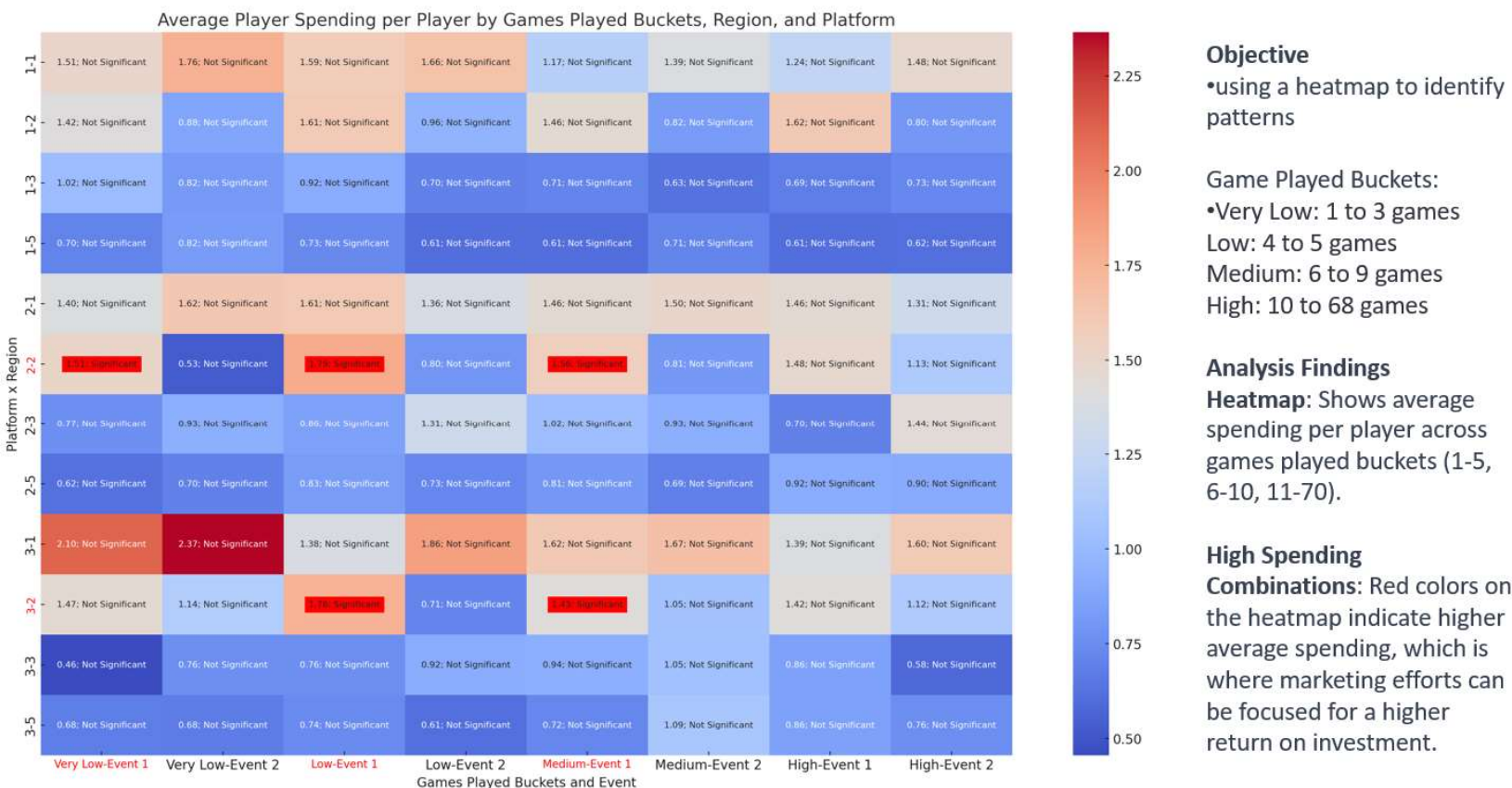


Methodology/Analytical Proficiency:

Employing Python and K-Means Clustering for data analysis, we've conducted a comprehensive comparative study of player engagement and spending between Event 1 and Event 2. This includes segmentation of players based on their in-game behavior and purchase patterns.



Heatmap to help identify spending patterns:



30

1. High Spending Segments:

The highest spending is seen in Platform 3, Region 1 across all skill buckets and events. This segment should be prioritized for future promotions and events to maximize revenue.

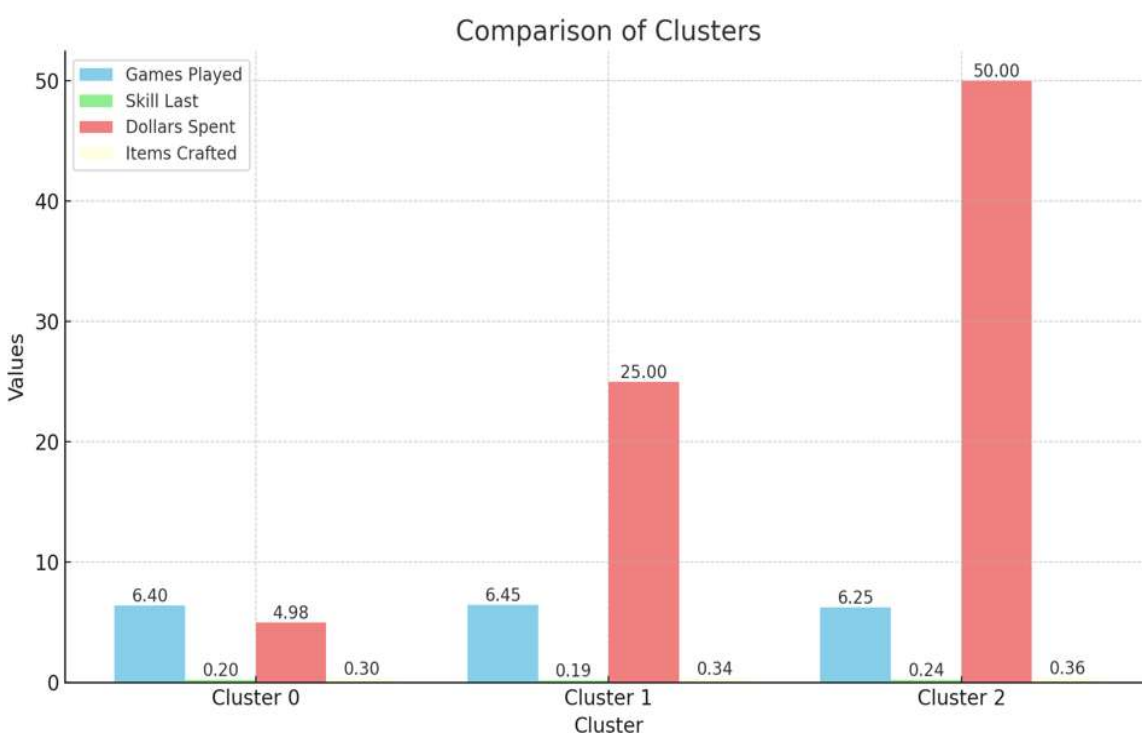
2. Low Spending Segments:

The lowest spending is observed in Platform 1, Region 5 across all skill buckets and events. Additional research on Infrastructure such as: lag time, package loss, CDN or SLA agreements with the Data Centers.

3. Platform and Region Differences:
- Platform 3 generally has higher spending compared to Platforms 1 and 2. This suggests that the player base on Platform 3 may be more engaged or find more value in the events.

K- Mean Approach:

The K-means clustering on the raw data has resulted in three distinct clusters



Cluster 2: High Spenders

6.25 games played, skill level of 0.24, average spending of 50.00 dollars

Monetization Opportunities:

- Identify monetization opportunities for players in Cluster 2 by offering premium content packages, loyalty rewards, and special promotions such as loyalty rewards, exclusive content, and personalized in-game experiences that are designed to incentivize higher spending.

Background:

Pre-merger, the four independent companies managed separate data systems, leading to inefficiencies. Post-merger, the challenge was integrating these systems to maintain operational continuity and leverage a unified market presence. The process involved analyzing operations and combining hundreds of data tables and relationships to form a coherent data structure.

Executive Summary/Business Objective:

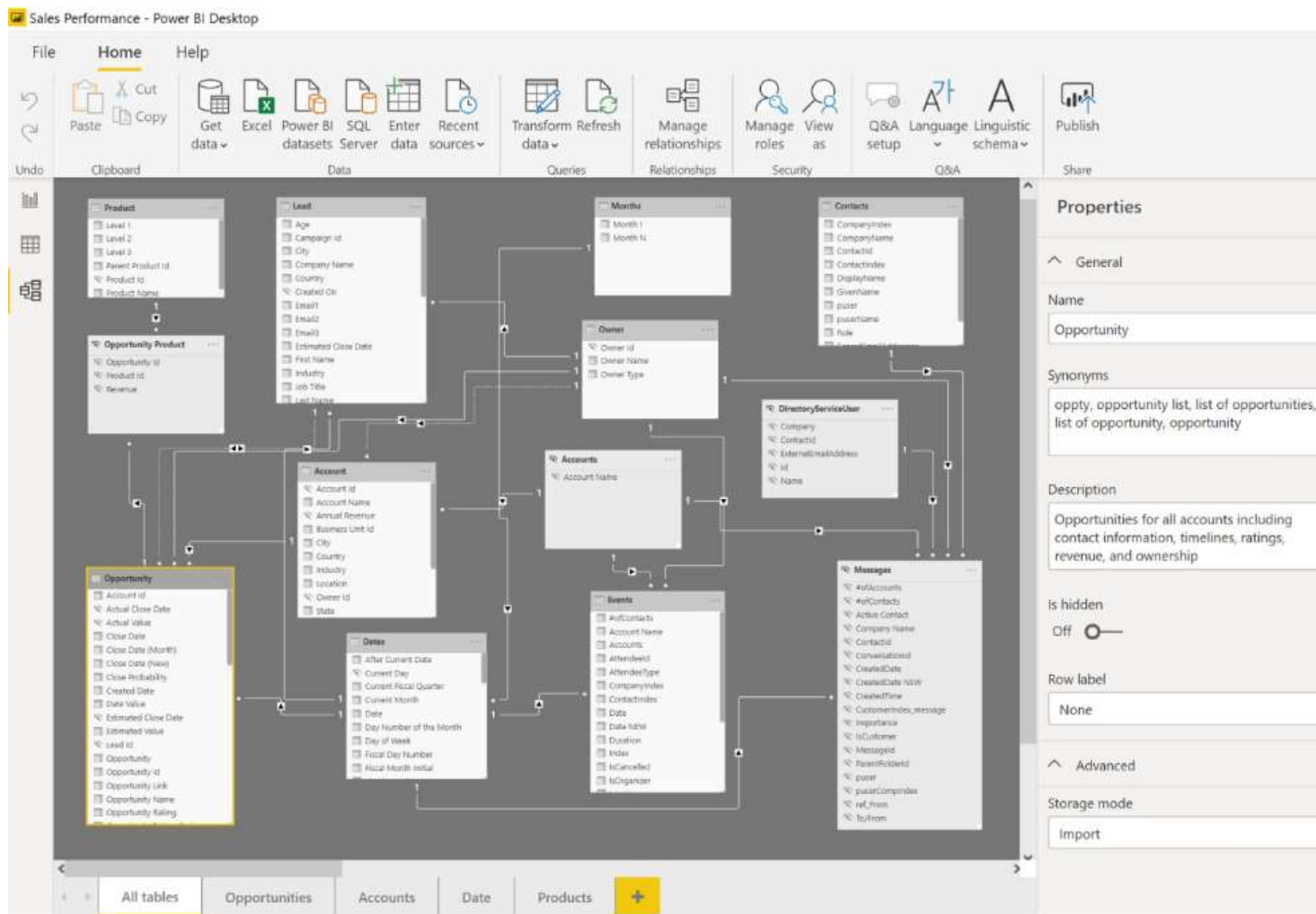
The objective post-merger is to optimize financial performance by creating a unified data ecosystem. This will offer improved strategic decision-making capabilities and enhance value for stakeholders, with the ultimate aim of a seamless data environment that supports dynamic business intelligence

```
IF OBJECT_ID('tempdb..##AllTables') IS NULL
BEGIN
    CREATE TABLE ##AllTables
    (
        DatabaseName sysname,
        SchemaID INT,
        ObjectID INT,
        ParentObjectID INT, -- New column for parent object ID
        SchemaName sysname NULL,
        TableName sysname,
        PrimaryKeyColumn sysname NULL,
        ForeignKeyColumn sysname NULL,
        ColumnName sysname NULL,
        ColumnDescription NVARCHAR(MAX) NULL
    );
END;

-- Populate the temporary Table using sp_MSforeachdb
EXEC sp_MSforeachdb
USE [?];
INSERT INTO ##AllTables
SELECT
    ' ',
    SCHEMA_ID(SCHEMA_NAME()) AS SchemaID,
    T.object_id AS ObjectID,
    ISNULL((SELECT TOP 1 parent_object_id FROM sys.foreign_keys WHERE referenced_object_id = t.object_id), 0) AS ParentObjectID,
    SCHEMA_NAME() AS SchemaName,
    t.name AS TableName,
    (
        SELECT TOP 1 pkcols.name
        FROM sys.indexes i
        INNER JOIN sys.index_columns ic ON t.object_id = i.object_id AND i.index_id = ic.index_id
        INNER JOIN sys.columns pkcols ON pkcols.object_id = t.object_id AND pkcols.column_id = ic.column_id AND i.is_primary_key = 1
    ) AS PrimaryKeyColumnName,
    (
        SELECT TOP 1 fkcols.name
        FROM sys.foreign_key_columns fkc
        INNER JOIN sys.columns fkcols ON fkcols.object_id = t.object_id AND fkcols.column_id = fkc.parent_column_id
    ) AS ForeignKeyColumnName,
    C.name AS ColumnName,
    CONVERT(NVARCHAR(MAX), ep.value) AS ColumnDescription
FROM sys.tables t
JOIN sys.columns C ON C.object_id = T.object_id
LEFT JOIN sys.extended_properties ep ON ep.major_id = C.object_id AND ep.minor_id = C.column_id AND ep.name = 'MS_Description'
```

Research Question/Data Exploration:

The key question is how the merged data environment affects financial health and operational efficiency. The exploration includes a deep dive into the Reverse Schema Building to combined sales, operation, and business acumen, seeking areas of opportunity created by the merger.



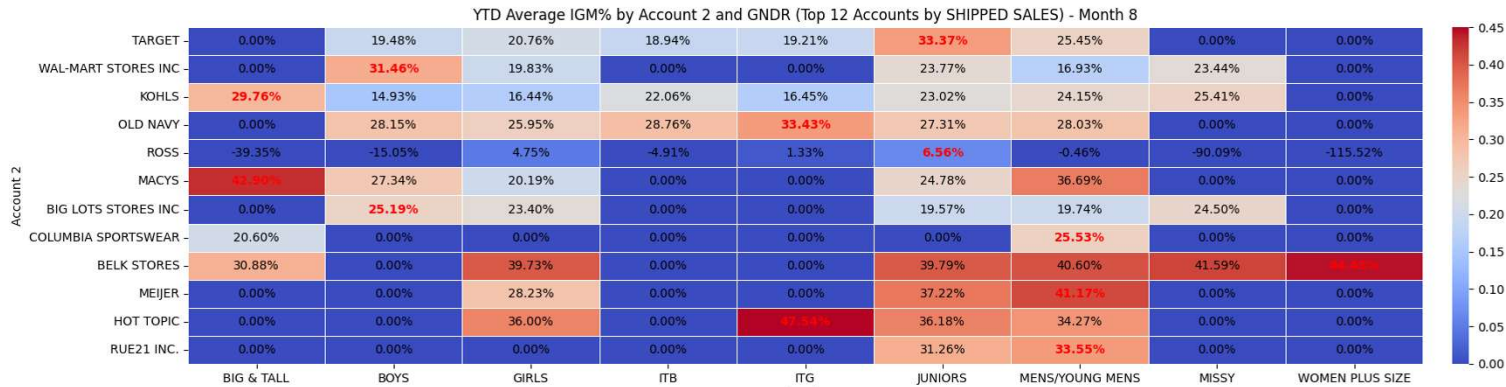
Methodology/Analytical Proficiency:

The methodology hinges on advanced data analysis techniques using Python and SQL. Power BI's interactivity is crucial for real-time insights. This involves reverse engineering the data Schema to ensure all relationships and dependencies are understood and accurately represented in the consolidated analytics platform.



Findings/Strategic Implications:

Analysis reveals specific divisions and accounts that show promising performance post-merger, highlighting the potential for strategic realignment. Additionally, areas where efficiencies can be realized are identified, suggesting a reprioritization of resources to maximize margins and reduce costs.



Background:

The project was an extension of the Executive Dashboard, to address the financial oversight across various operational categories, including logistics, freight, supplies, and temporary labor. The focus was on interpreting complex datasets spanning multiple months to identify trends, variances, and seasonal impacts on transaction volumes, which were pivotal for strategic financial planning and operational budgeting.

Executive Summary/Business Objective:

The project sought to provide a compelling case for stakeholders, including the CEO and directors, on the potential for cost savings and the positive influence on the bottom line.

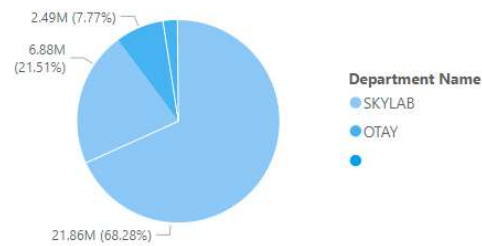
Research Question/Data Exploration:

Collaborating with team members, we aimed to gather requirements and probe into the financial data, revealing the nature of spending and identifying areas for potential savings.

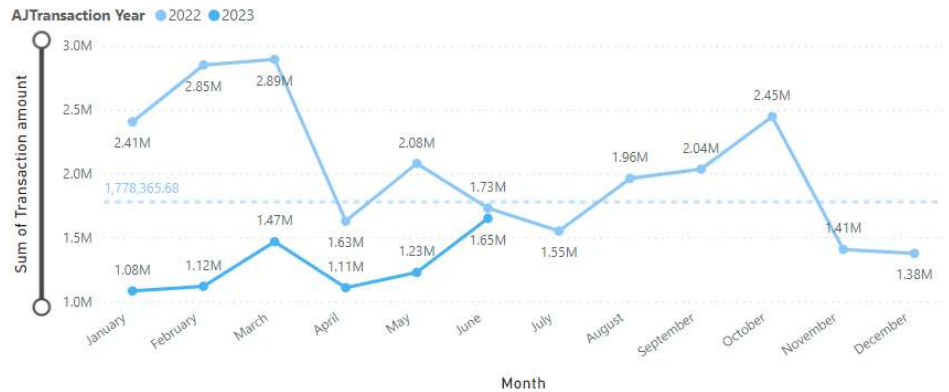
Methodology/Analytical Proficiency:

The proficiency of the team in using Python for data consolidation and SQL for database management ensured meticulous organization and interpretation of financial data. Experimentation and analysis included breaking down expenses, performing month-over-month and year-over-year comparisons, and identifying outliers and trends.

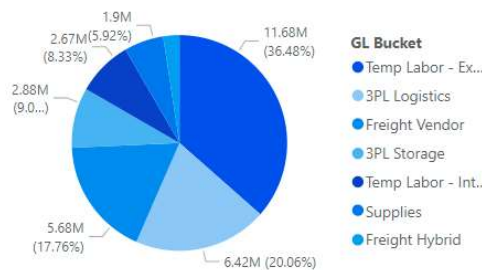
Sum of Transaction amount by Department Name and AJTransaction Year



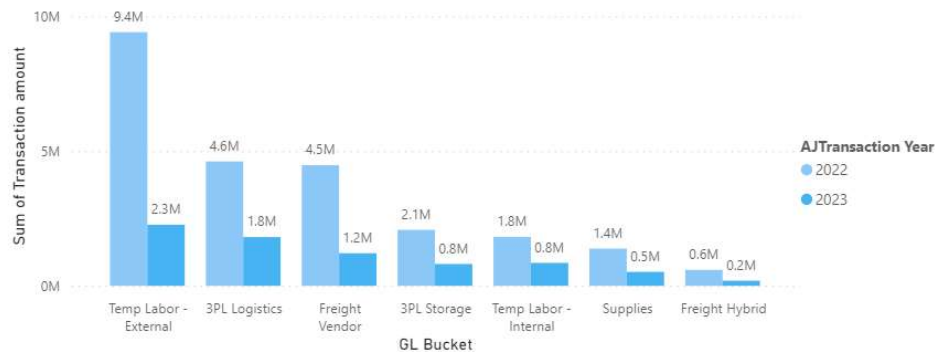
Sum of Transaction amount by Month and AJTransaction Year



Sum of Transaction amount by GL Bucket



Sum of Transaction amount by GL Bucket and AJTransaction Year



Findings/Strategic Implications:

The findings from the analysis indicated significant opportunities for cost optimization. Insights into departmental spending patterns, particularly in "SKYLAB" and "3PL Logistics," allowed for strategic recommendations to be made. These insights were expected to influence decision-making and financial stewardship at the departmental and organizational levels.

PROCESS AUTOMATION / QUARTERLY ROYALTY MANAGEMENT

Background:

Previously, the Royalty project required two full-time financial analysts to manually process 99 contracts every quarter, dedicating one full month to this task. The manual system was not only time-consuming but also susceptible to human error, leading to inefficiencies and delays in financial reporting and decision-making.

Executive Summary/Business Objective:

The goal is to automate the royalty management process, converting the cumbersome month-long task of processing 99 contracts into a proficient system capable of completing the task within two hours. This automation aims to slash labor time by 85%, thereby significantly reducing operational costs and enhancing efficiency and accuracy.

```
from openpyxl import load_workbook, Workbook
import requests
import json

# Function to fetch data from the OpenAI API
def fetch_data_from_openai(prompt):
    url = "https://api.openai.com/v1/engines/davinci/completions"
    headers = {
        "Authorization": "",
        "Content-Type": "application/json"
    }
    data = {"prompt": prompt, "max_tokens": 100} # Adjust as needed
    response = requests.post(url, headers=headers, data=json.dumps(data))
    if response.status_code == 200:
        return response.json()['choices'][0]['text'].strip()
    else:
        print(f"Error {response.status_code}: {response.text}")
        return None

# Load the workbook
file_path = "C:\\Users\\jchang\\Desktop\\access\\12-5-23.xlsx"
wb = load_workbook(file_path)

# Define the column mappings
column_mappings = {
    'SQL': [1, 7, 5, 9, 11, 12, 13, 14, 15, 16, 18, 25, 23, 26, 24, 27, 21],
    'AMAZON': [1, 16, 17, 6, 5, 7, 8, 9, 10, 19, 18, 11, 12, 14, 13, 15, 2],
    'AW W': [27, 31, 1, 5, 7, 8, 12, 13, 28, 30, 29, 14, 21, 22, 23, 24, 20],
    'AW R': [27, 31, 1, 5, 7, 8, 12, 13, 28, 30, 29, 14, 21, 22, 23, 24, 20],
    'A&F': [2, 35, 17, 21, 19, 26, 27, 28, 29, 37, 31, 38, 39, 41, 40, 42, 24],
    'NTD': [2, 6, 8, 21, 19, 26, 27, 28, 29, 37, 31, 38, 39, 41, 40, 42, 24]
}

# Define vendor number lists
list1 = [9129, 9140, 9143, 9187, 9204, 9288, 9291, 9318, 9326, 9327, 9328, 9329, 9330, 9331, 9
list2 = [1816, 3030, 3039, 4003, 4016, 4031, 4045, 4052, 4073, 4075, 4117, 4355, 5030, 5034, 5
list3 = [5604, 1730, 873, 9135, 4106, 6066, 6297, 3076, 6372, 4139, 6850, 5702, 4510, 5194, 91

# Create a new workbook for the output
```

Research Question/Data Exploration:

The central question we addressed is whether it is feasible to automate the royalty management process while improving or maintaining the accuracy of contract handling. Our exploration involved collaborating with finance department stakeholders to define system requirements that could handle the complex diversity of contract terms.

Methodology/Analytical Proficiency:

Our methodology incorporated the use of Python to automate data consolidation and transformation, and use Excel VBA to maintain the data repository and processes of notify payment detail to vendors. This included developing custom scripts to automate the extraction and aggregation of data from multiple sources, and establishing a reliable backup system to ensure data integrity.

```
Sub ProcessData2222()  
    Dim vendorNumber As Variant  
    Dim wb As Workbook  
    Dim wsCB1 As Worksheet, wsCB2 As Worksheet, wsVendorList As Worksheet, ws64 As Worksheet  
    Dim wsActual As Worksheet  
    Dim newFileName As String  
    Dim lastRow As Long  
  
    ' Set references to worksheets  
    Set wb = ThisWorkbook  
    Set wsCB1 = wb.Sheets("CB1")  
    Set wsCB2 = wb.Sheets("CB2")  
    Set wsVendorList = wb.Sheets("VendorList")  
    Set ws64 = wb.Sheets("64")  
  
    ' Process CB1 Vendors  
    For Each vendorNumber In wsVendorList.Range("A2:A36").Cells  
        ProcessVendor wsCB1, ws64, wsActual, vendorNumber, "CB1", newFileName  
    Next vendorNumber  
  
    ' Process CB2 Vendors  
    For Each vendorNumber In wsVendorList.Range("C2:C30").Cells  
        ProcessVendor wsCB2, ws64, wsActual, vendorNumber, "CB2", newFileName  
    Next vendorNumber  
End Sub  
  
Sub ProcessVendor(wsCB As Worksheet, ws64 As Worksheet, ByRef wsActual As Worksheet, vendorNumber As Variant, CBType As  
    Dim lastRow As Long  
  
    ' Filter CB by vendor number  
    wsCB.Range("Q1").AutoFilter Field:=17, Criteria1:=vendorNumber.Value ' Adjust Field number for CB2 if necessary  
  
    ' Create a new workbook for vendor  
    Set wsActual = Workbooks.Add.Sheets(1)  
    FormatActualSheet wsActual  
    PerformVLookup wsActual, ws64, vendorNumber  
  
    ' Copy values from CB to Actual sheet, starting from A17  
    lastRow = wsCB.Cells(wsCB.Rows.Count, "Q").End(xlUp).Row  
    If lastRow > 1 Then  
        wsCB.Range("A17:P" & lastRow).Copy  
        wsActual.Range("A17").PasteSpecial Paste:=xlPasteValues  
    End If
```

Strategic Implications:

The project's implementation has led to a substantial increase in processing efficiency, with an 85% reduction in time spent on royalty management. These findings carry profound strategic implications, offering a roadmap for similar efficiency improvements across various financial processes, with the potential to redefine the organization's approach to fiscal management.

SCOPE OF SKILLS

Programing Language:

Python, VBA

Data Engineering Tools:

ETL, SSMS, AS400, Snowflakes, Power Query, Integration Analysis

Data Analysis Libraries:

Pandas, NumPy, Seaborn, Matplotlib, Openpyxl, SciPy, TensorFlow

Statistical Analysis:

Descriptive/Inferential Statistics, A/B Testing, Predictive Modeling, Forecasting, Regression Analysis, Hypothesis Testing, & Time Series Analysis

BI Tools:

Power BI, Google Analytics/Data Studio, Excel

Digital Marketing:

Facebook, Google Ads, Shopify, Google Analytics, Data Studio, Campaign Management, Performance and Content Optimization


Data Modeling:

STAR/ER/DAG diagrams, and Normalization

JASON CHANG

"ANYTHING'S POSSIBLE IF
YOU'VE GOT ENOUGH
NERVE" J.K. ROWLING

LET'S CONNECT!

 (626) 203 - 3319

 jason.chang01022021@gmail.com

 Irvine, CA

 [linkedin.com/in/jchang0102](https://www.linkedin.com/in/jchang0102)

