

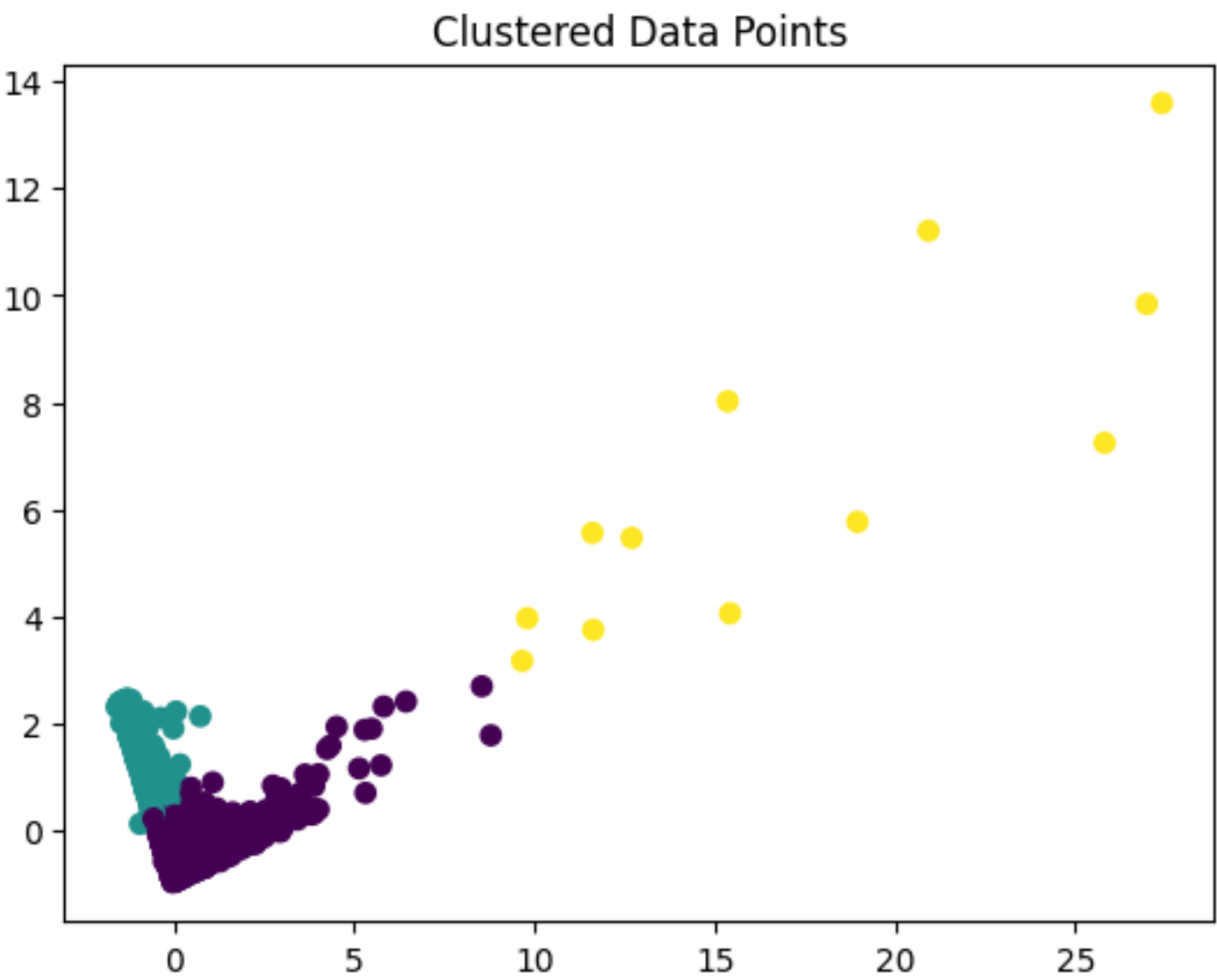
Online Retail Store

Capstone Project

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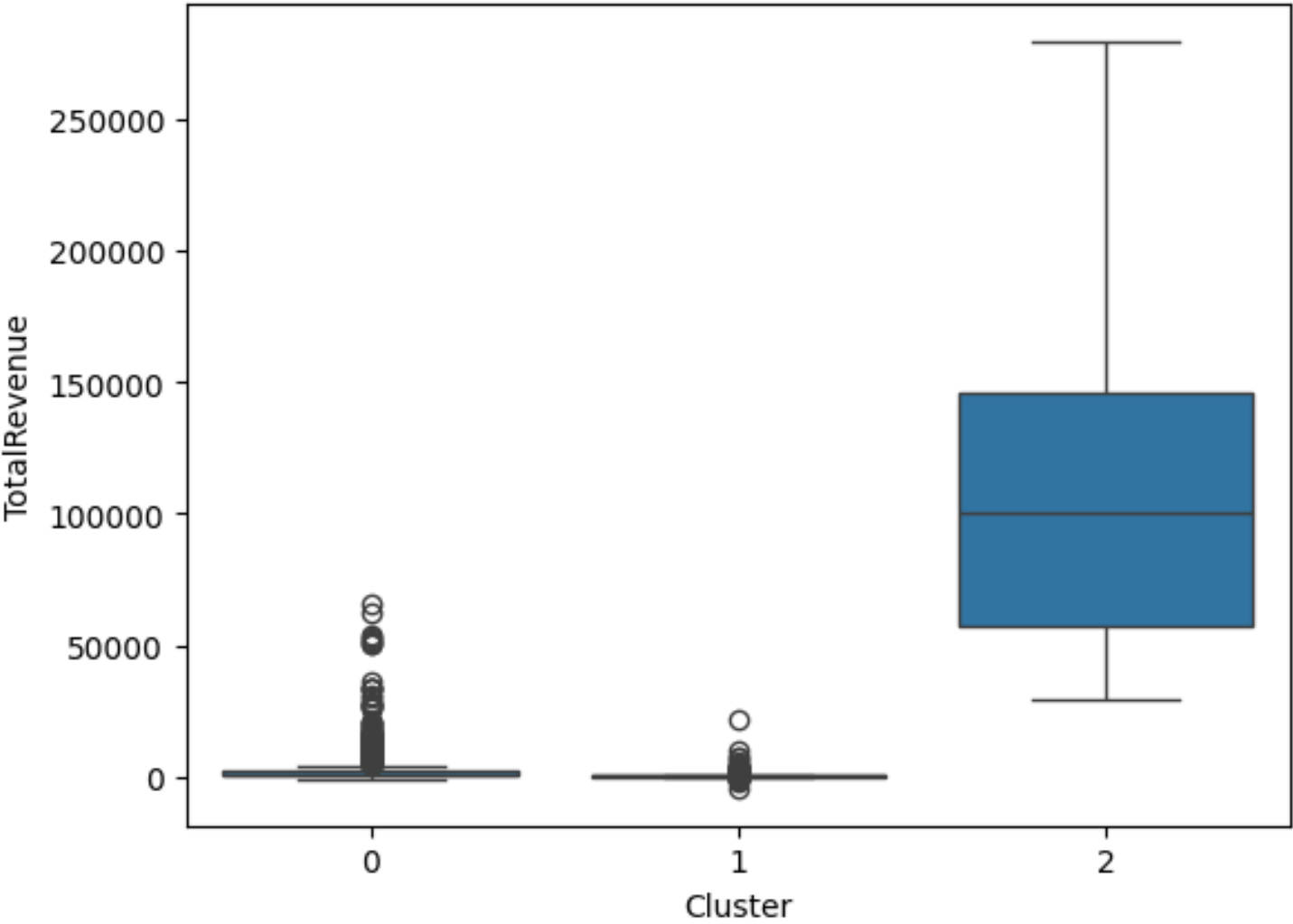
Problem Statement	An online retail store is trying to understand the various customer purchase patterns for their firm.
Project Objective	<p>Extracting Valuable Insights from Customer Purchasing History:</p> <p>Explore the provided dataset to uncover actionable insights into customer purchasing behavior. Identify customers , popular products, and regions that can provide a competitive advantage for the online retailer.</p> <p>Customer Segmentation for Targeted Strategies:</p> <p>Employ advanced segmentation techniques to categorize customers based on their purchasing behavior. RMF</p>
Data Description	<p>Contains 541909 rows and 8 Columns</p> <p>Invoice: A unique identifier assigned to each transaction or purchase made by a customer.</p> <p>StockCode: A specific code assigned to uniquely identify each product or item in the retailer's inventory.</p> <p>Description: A detailed description of the product or item purchased.</p> <p>Quantity: The quantity of a particular product or item included in a specific invoice or transaction.</p> <p>InvoiceDate: The date and time when the invoice or transaction took place.</p> <p>Price: The price per unit of the product, representing the cost assigned to a single item in the transaction.</p> <p>CustomerID: A unique identifier assigned to each customer.</p> <p>Country: The geographical region or country where the purchase transaction occurred</p>
Data Pre-processing Steps and Inspiration	<p>Cleaning the missing value</p> <p>Converting Customer ID as int and invoice date into datetime Datatype</p> <p>Identify top customers based on:</p> <ul style="list-style-type: none">● Recency: Latest purchases made● Frequency: Shopping frequency● Revenue: Total amount spent <p>These metrics provide insights into customer engagement, shopping habits, and overall contribution to revenue.</p> <p>StandardScaler is chosen for feature scaling to ensure uniformity.</p>
K Mean Algorithm	<p>K-Means is ideal for RFM (Recency, Frequency, Monetary) analysis due to its simplicity, scalability for large datasets, and effectiveness with numeric features.</p> <p>It provides clear, interpretable clusters, making it a suitable choice for unsupervised customer segmentation based on buying behavior.</p>
Assumptions	<p>The dataset is representative of the overall customer base.</p> <p>Customer transaction records are accurate and up-to-date.</p>
Model Evaluation and Techniques	<p>Clustering Evaluation: Utilize silhouette scores and within-cluster sum of squares for K-means clustering.</p> <p>Silhouette Score: 0.6003883114752382</p>

Visual Inspection: Plot the clustered data points in a reduced-dimensional space (e.g., 2D or 3D) to visually inspect how well-defined the clusters are.

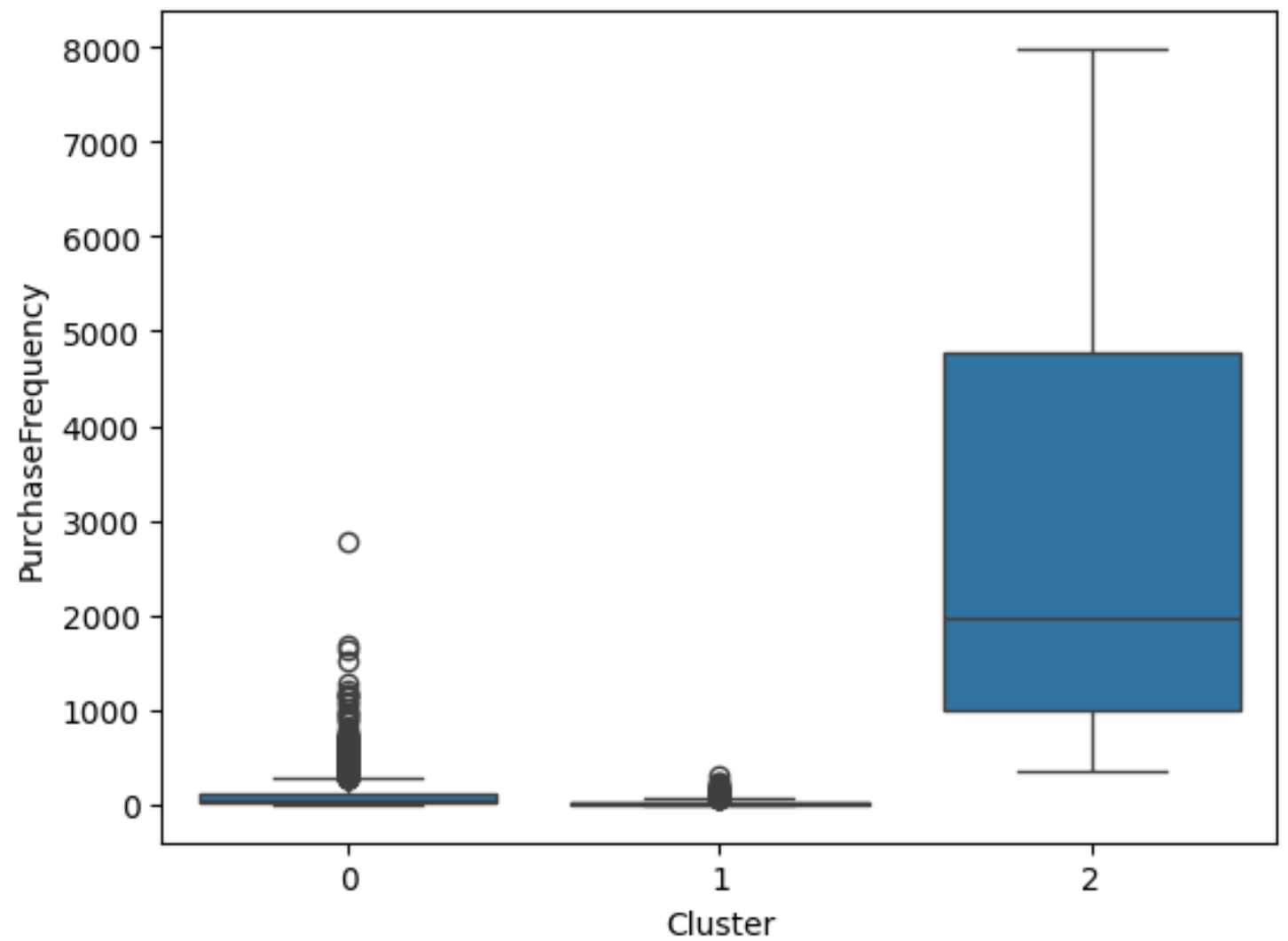


Inferences

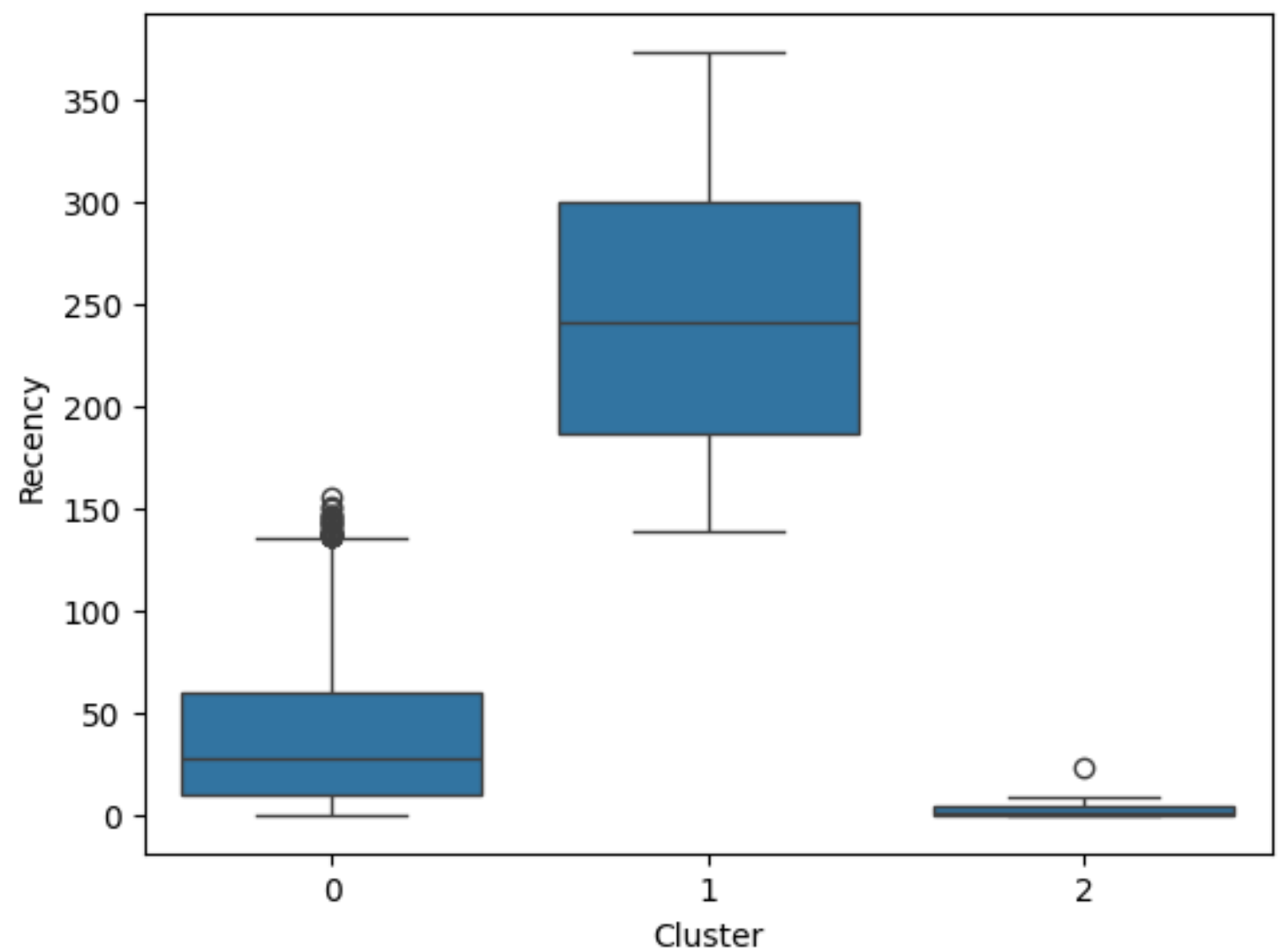
Optimal Revenue Growth Driven by Segment 2



Segment 2 Leads in Consistent and Frequent Product Purchases



Recent Purchases Dominated by Clusters 1 and 0 in Customer Segmentation



Personalized Marketing:

- Implement personalized marketing campaigns tailored to specific customer segments.

Dynamic Pricing Strategies for various Products:

- Optimize pricing based on customer preferences and buying patterns.

Enhanced Customer Experience:

- Implement insights to improve overall customer experience and satisfaction.

**Future Avenues for Project
Advancement:**

By leveraging data-driven insights, the online retail store aims to enhance customer engagement, drive sales, and stay competitive in the dynamic e-commerce landscape.