

University of Milano-Bicocca
LM DATA SCIENCE

Marketing Analytics



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Project Flow

We examined data with the objective of advocating for a marketing strategy grounded in data-driven insights

- **Customers Analysis**

Business Questions

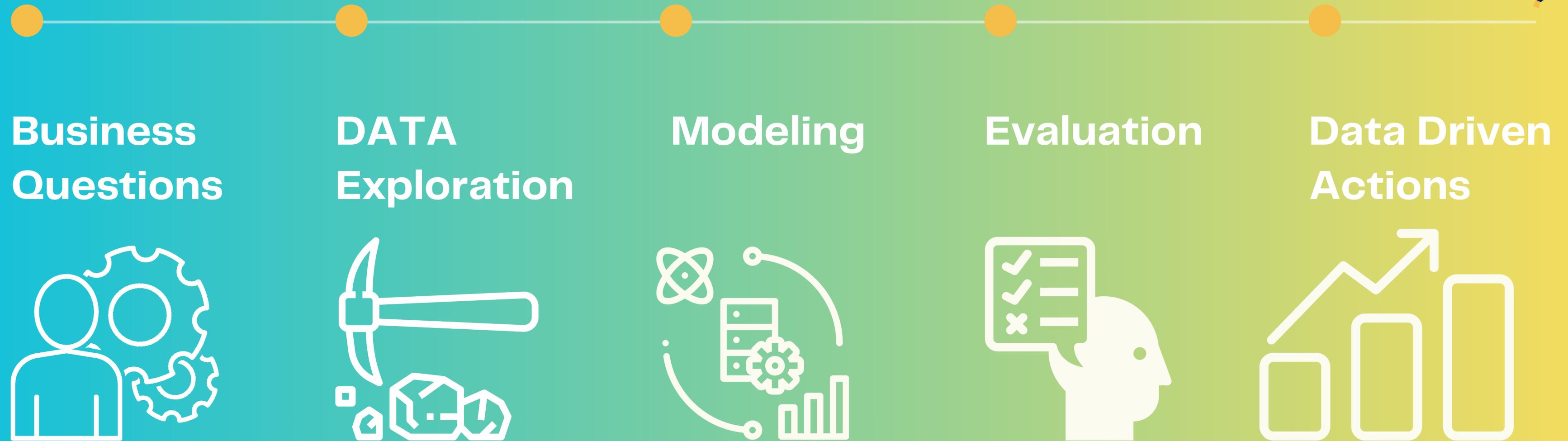
- **Product Analysis**

Churn Analysis and
MBA

- **Sentimental Analysis**

Analysis and
classification of reviews

Workflow



CUSTOMER SEGMENTATION

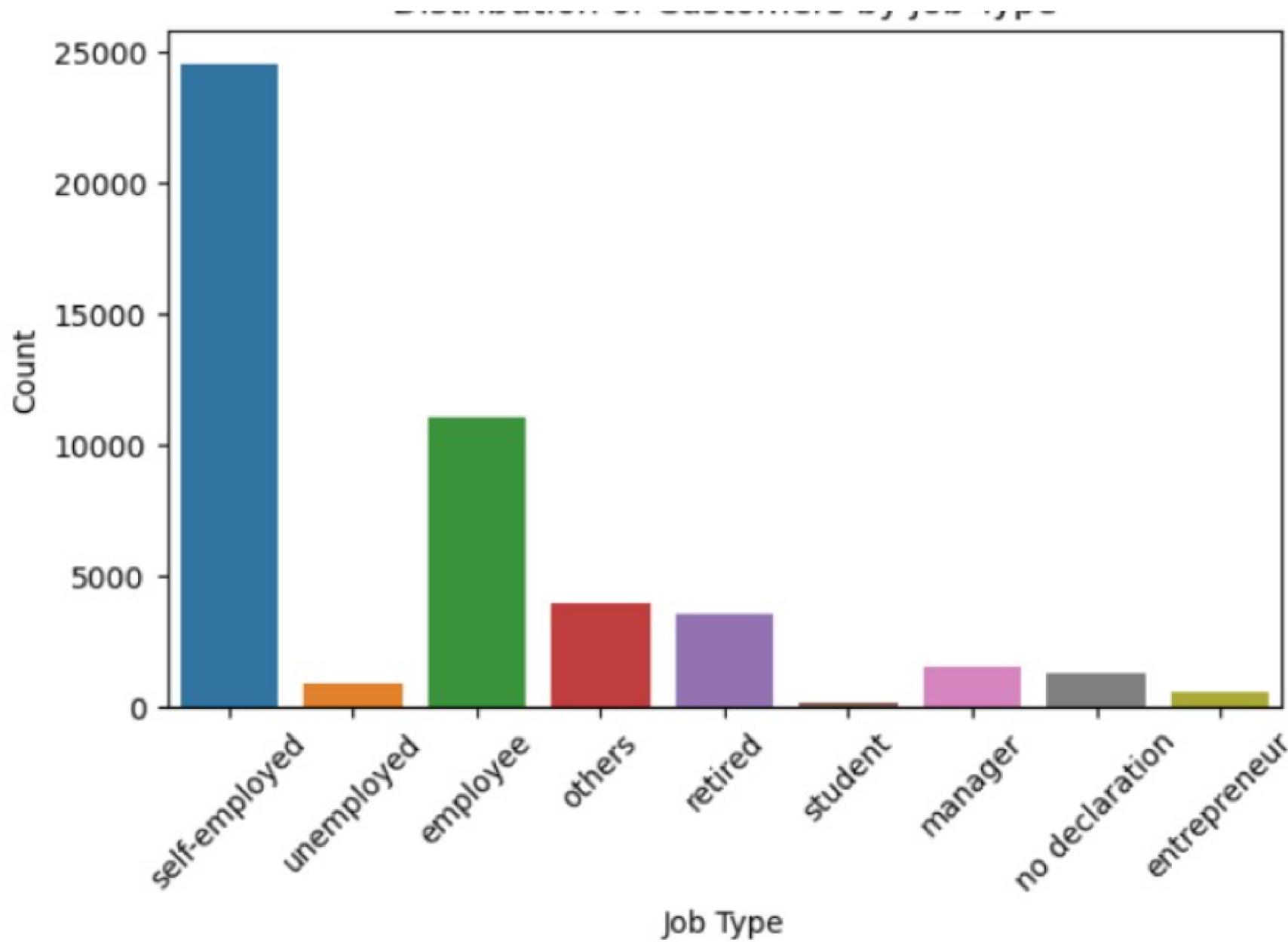


Customers are diverse, with varying location, engagement, preferences, and behaviors. Trying to reach everyone with the same message is not only ineffective but also inefficient, wasting valuable resources. This is where **customer segmentation** comes in, acting as the secret weapon for savvy marketers.

OUR CUSTOMERS

How they are distributed?

- By Job Type



The chart depicting the distribution of our customers by job type reveals a notable prevalence of self-employed individuals, followed by employees. This trend suggests a substantial representation of independent professionals, possibly influenced by the rising gig economy or entrepreneurial endeavors within our customer base.

OUR CUSTOMERS

What percentage of our customer base engages actively with our offerings?

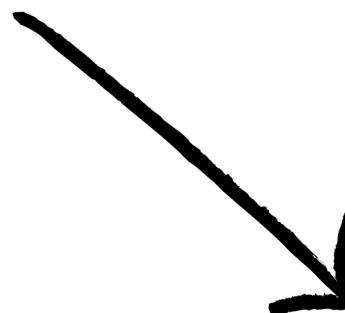
Our clientele made purchases from May 1, 2022 to April 30, 2023?

👎 Inactive

26%

👍 Active

74%



OUR CUSTOMERS

Can I categorize my customer base effectively?



Yes, we can use **RFM Model** to categorize them

RFM stands for **Recency** (R), **Frequency** (F), and **Monetary** (M). It's a marketing analysis Model that **categorizes customers** based on how recently they made a purchase, how frequently they make purchases, and the monetary value of their transactions.

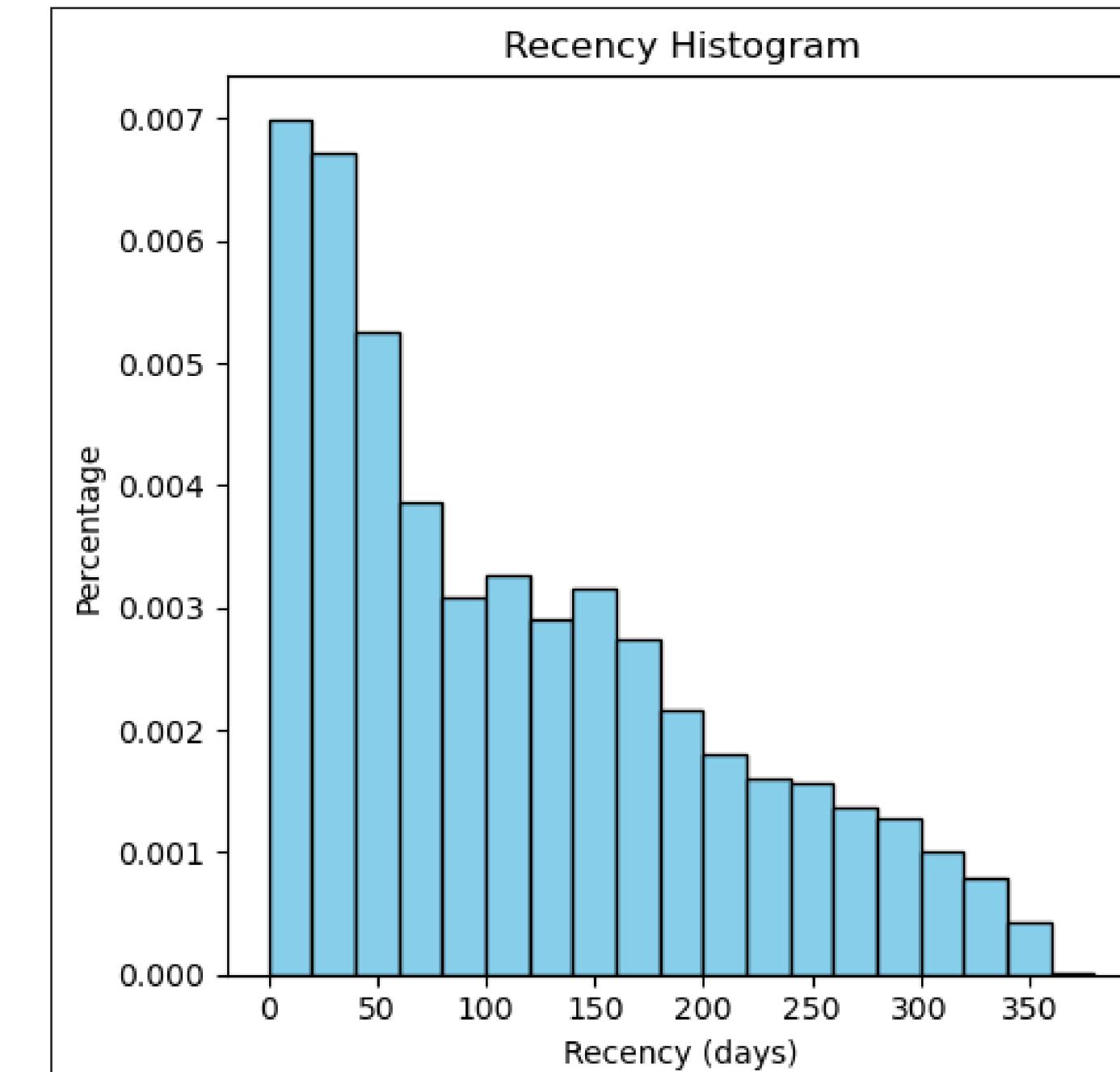
This segmentation helps businesses analyse their customers based on their transactional behavior to target them with personalized marketing campaigns.

OUR CUSTOMERS

When was the last purchase of the customer?

to answer this question, we will focus on the first point of RFM that is:

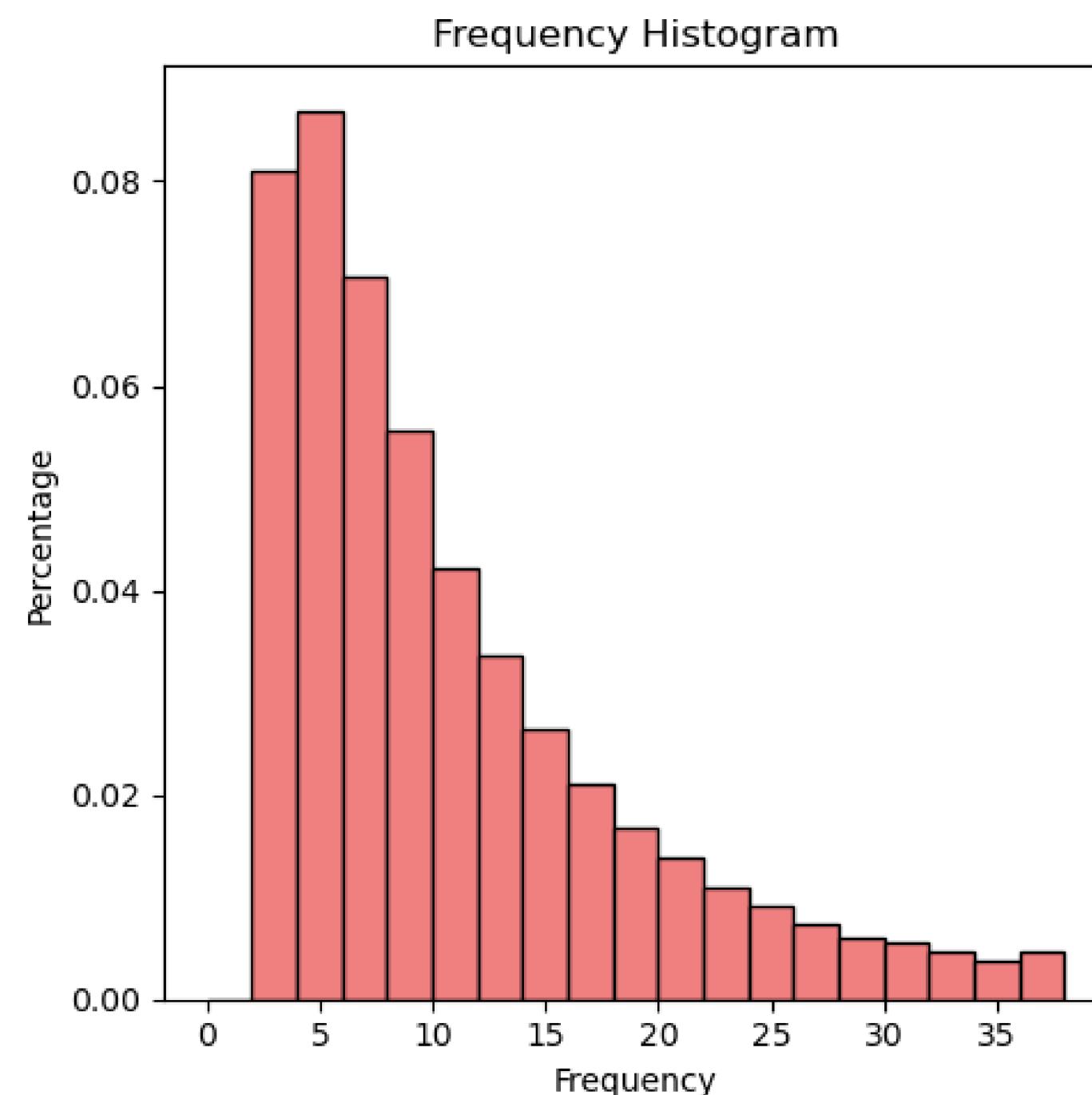
Recency (R): measures how recently a customer has engaged with a company, indicating the time since their last interaction or transaction. It is a crucial factor in understanding the current activity with a brand.



OUR CUSTOMERS

How frequently do our customers make purchases from us?

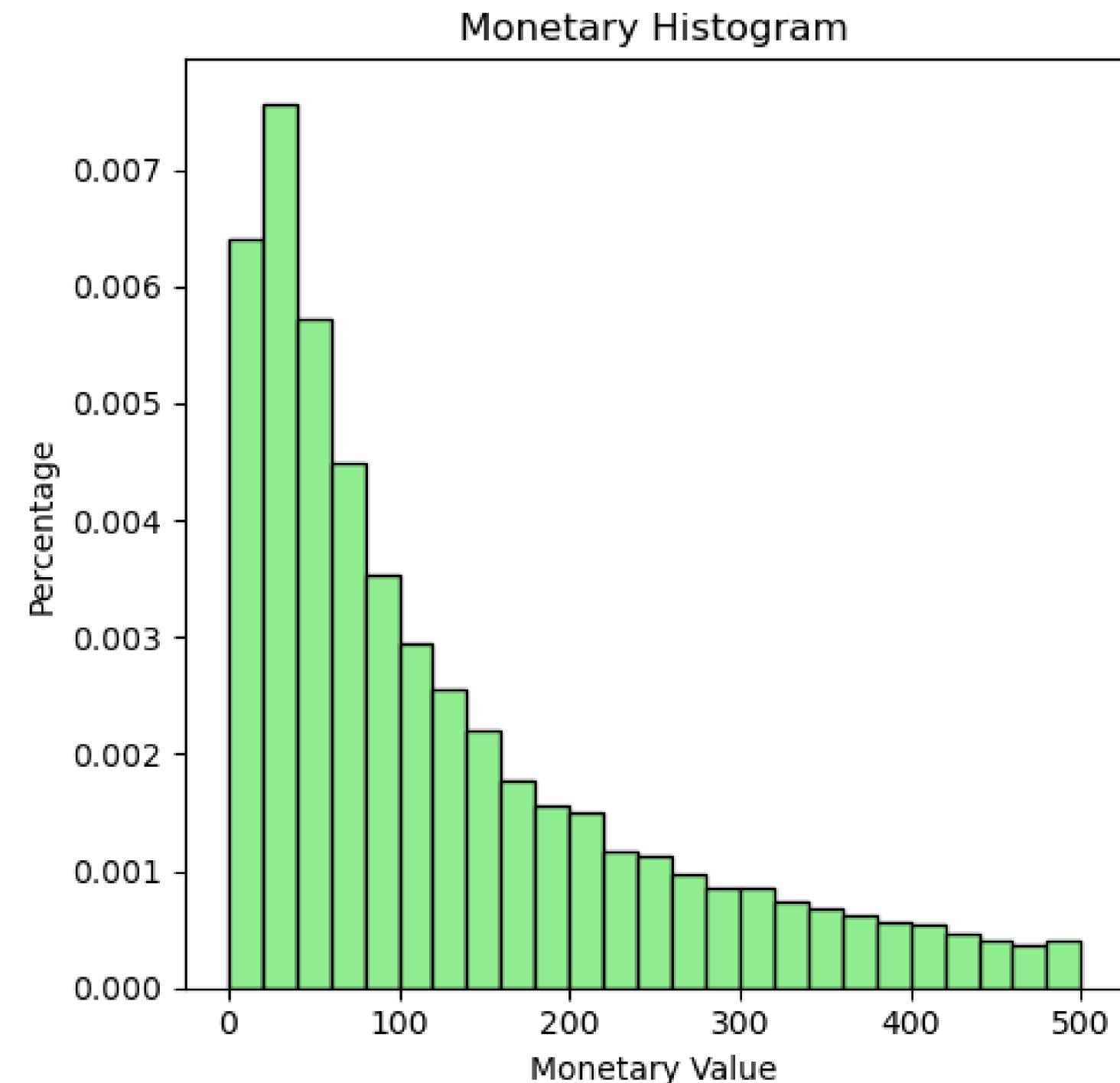
Frequency (F)): measures how often a customer makes purchases or interacts with a business. It helps businesses understand the regularity of customer engagement and transactions over a specific period.



OUR CUSTUMERS

Can we provide an estimate of spending of our custumers with us ?

Monetary (M): the amount of money a customer spends on purchases. It measures the monetary value of transactions made by a customer, providing insights into their spending behavior and contribution to the business's revenue.

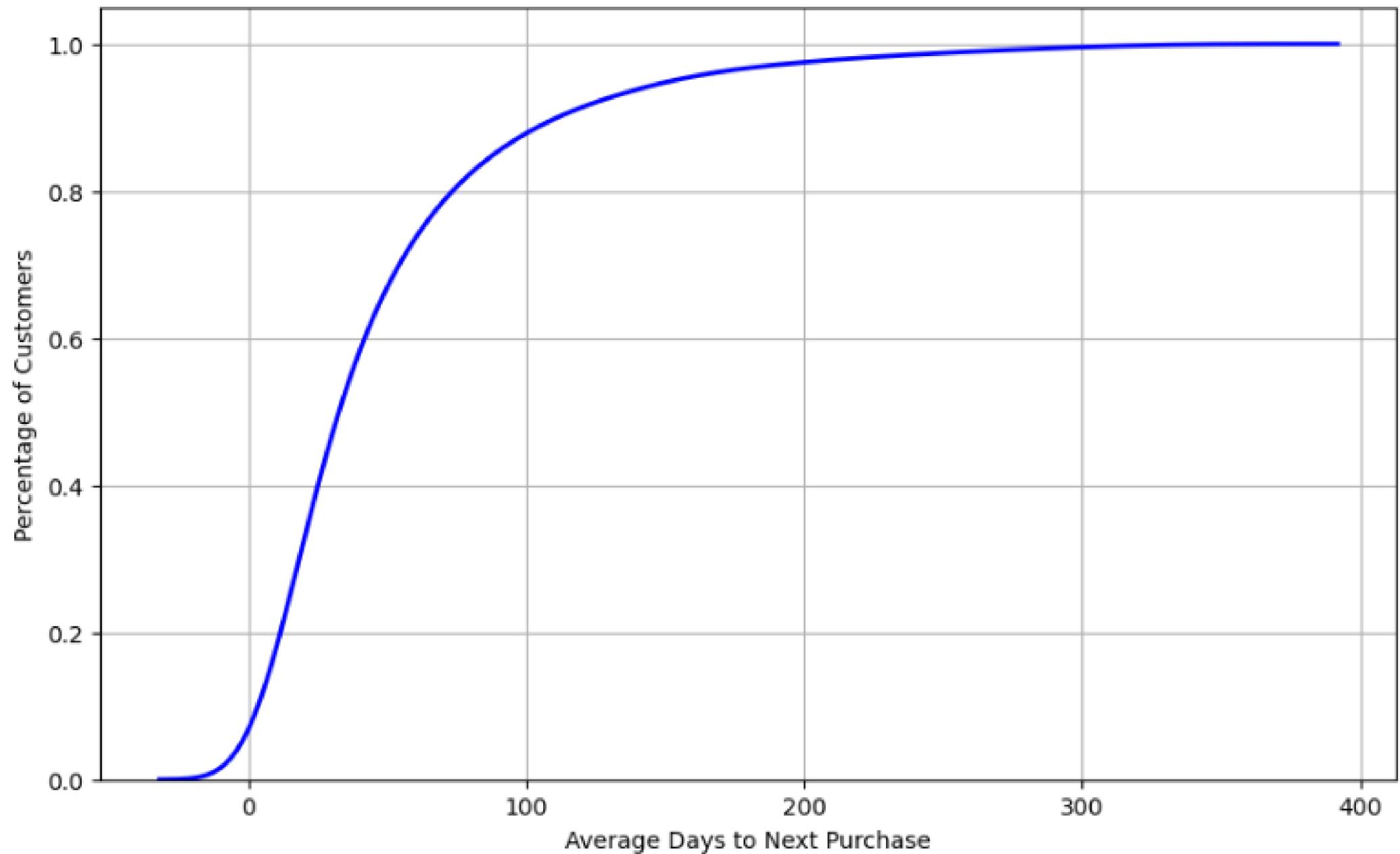


OUR CUSTOMERS

Purchase Curve

This Graph illustrates the Repurchase curve, showcasing that, on average, 90% of customers engage in repurchasing within a span of 111 days.

Utilizing the data derived from this curve, we established a threshold value to categorize customers across all the upcoming models.



OUR CUSTOMERS

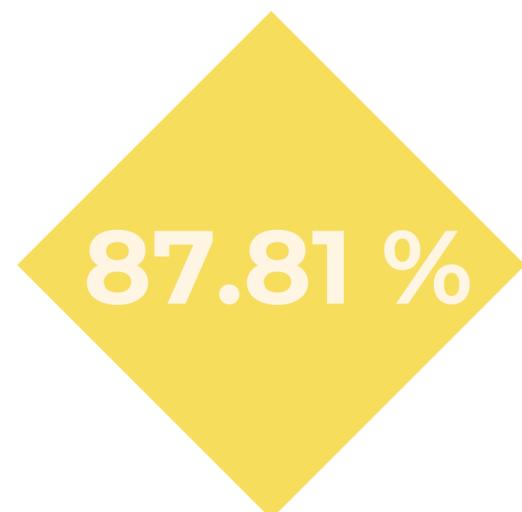
How many customers have demonstrated repeat engagement by making multiple transactions? what about customers who have only made a single purchase?

Among **Active** Customers there are Repeaters customers, who consistently make **multiple** purchases, showcasing loyalty, while one-shooters have only made a **single** purchase, indicating limited engagement.

From **1 May 2022 to 30 April 2023** we found in our database that:



One Shooters



Repeaters

OUR CUSTOMERS

Are there specific customers showing signs of potential disengagement?

to answer this, we can use the **Churn Model** which is a **supervised learning** model in marketing analytics designed to predict the **likelihood** of customers **discontinuing** their engagement with a business. The target variable, constructed as a binary outcome (**churn or not**).

Initially, we had two datasets that we merged ; one from the preprocessing phase and another containing customer base labels. Our focus was specifically on the active customer subset identified through repurchase curve analysis.

OUR CUSTOMERS

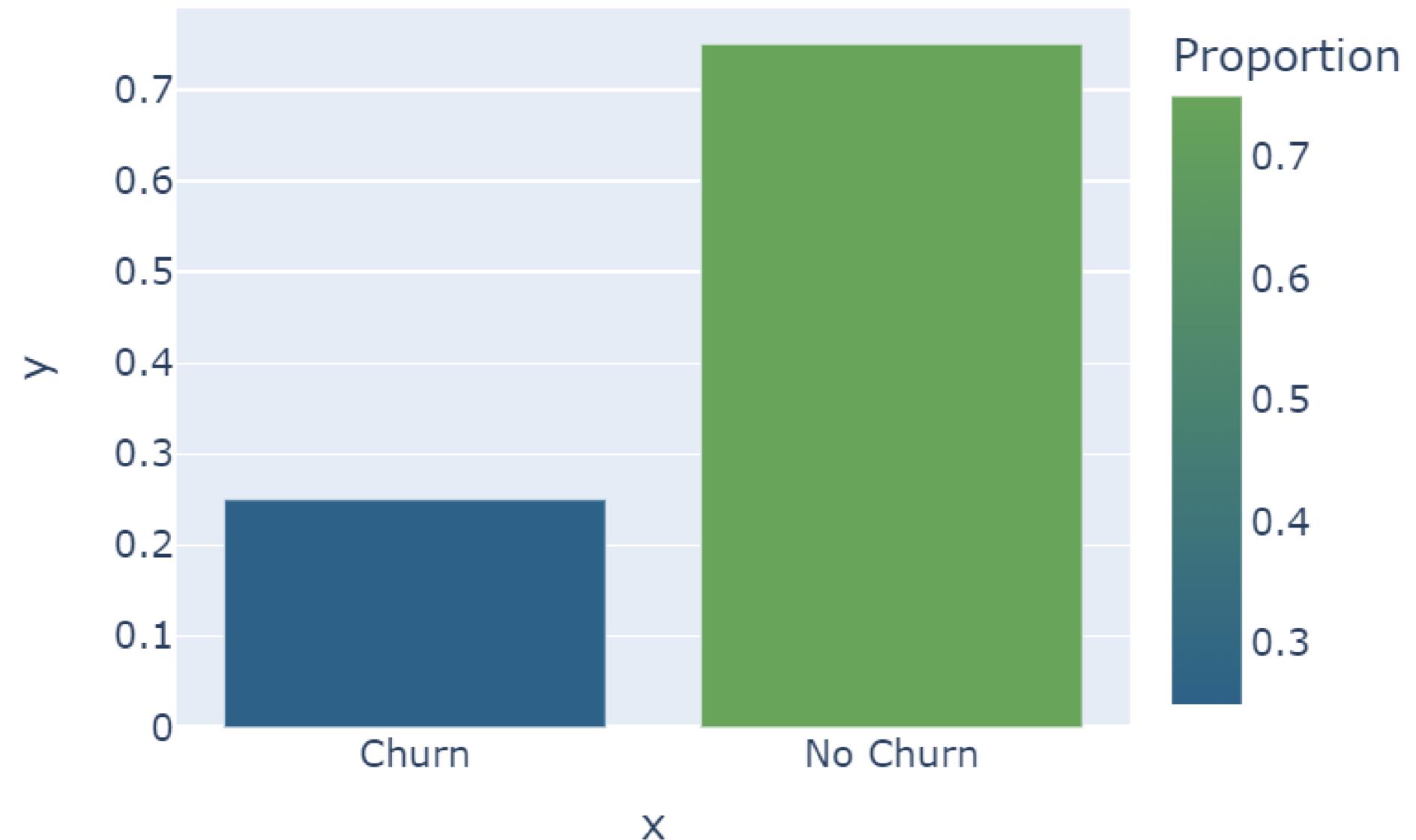
Are there specific customers showing signs of potential disengagement?

	Accuracy	Recall	Precision	F1-SCORE
SVC	0.90	0.96	0.87	0.91
Logistic Regression	0.85	0.88	0.86	0.87
Random Forest	0.90	0.89	0.89	0.96
Grading Boosting	0.92	0.93	0.90	0.97

OUR CUSTOMERS

Are there specific customers showing signs of potential disengagement?

we designated January 8, 2023, as the reference date, while the lookback date was set at August 11, 2022. Defining a 111-day range for both the lookback and holdout periods, mirroring the repurchase interval, we established the criterion that a customer is deemed a churner if no purchase occurs within these time frames. The outcome is denoted as 1 for churners and 0 otherwise.



MBA

Market Basket Analysis (MBA) serves as a sophisticated model crafted to discern, assess, and gauge the interconnections within product purchases. Its primary objective is to uncover products that exhibit a consistent pattern of being bought together, derived from customer transactions.

It has Three main Elements:

- **Support:** The frequency of products purchased together, guiding businesses to identify popular product combinations for strategic promotions.
- **Confidence:** Measures the likelihood of a customer purchasing one product given the purchase of another, aiding in crafting reliable product associations for targeted marketing.
- **Lift:** Evaluates the significance of product associations by comparing observed co-occurrence to chance, helping businesses distinguish between meaningful patterns and random occurrences.

MBA

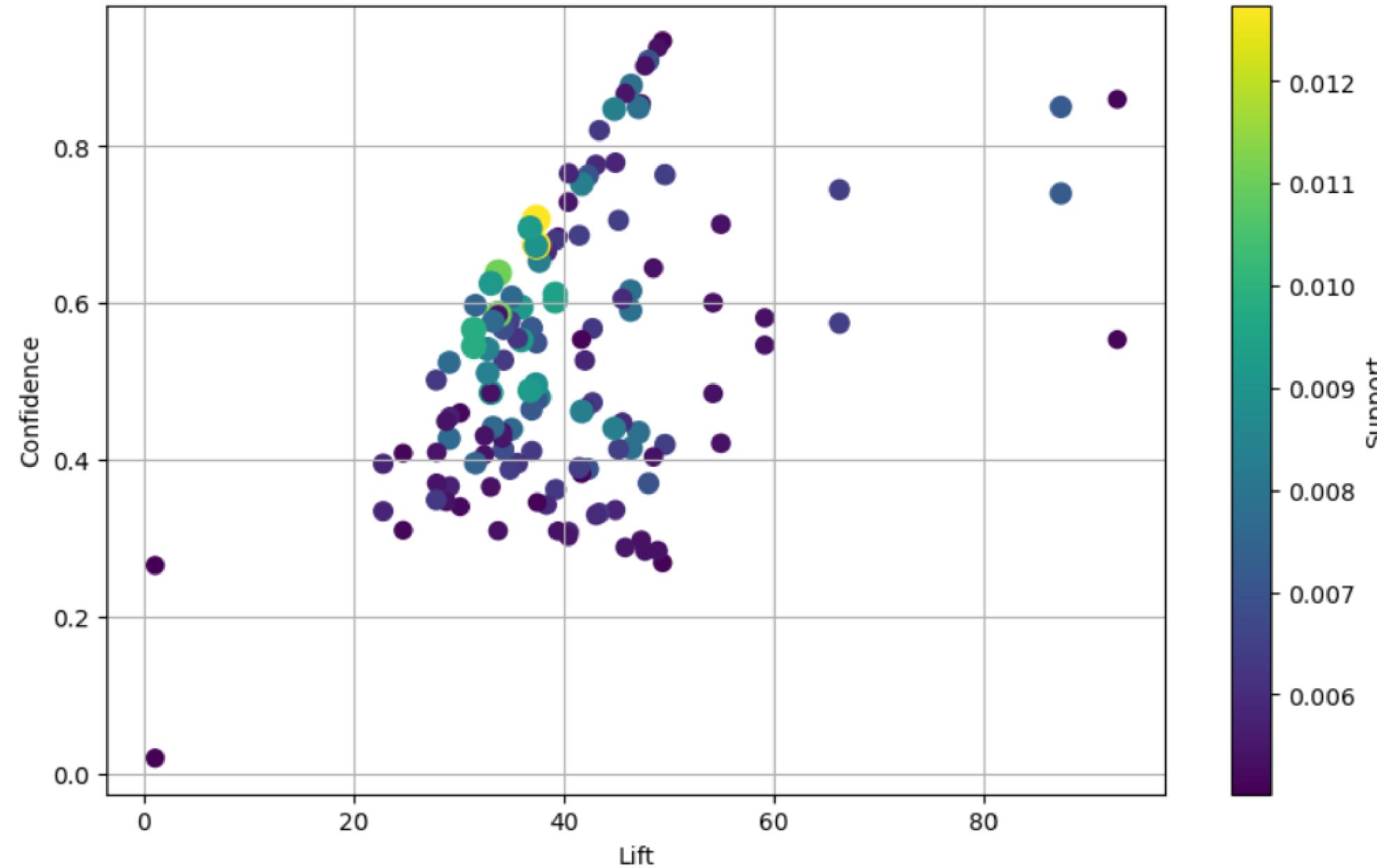
Top 4 Rules based on Lift:

Antecedents	Consequents	Lift
36298122.0	36298206.0	92.688501
36298206.0	36298122.0	92.688501
36298353.0	36298381.0	87.323424
36298381.0	36298353.0	87.323424

Top 4 Rules based on Confidence:

Antecedents	Consequents	Confidence
32078795.0, 32842551.0	32079103.0	0.934243
32078935.0, 32842551.0	32079103.0	0.925581
32079082.0, 32842551.0	32079103.0	0.908852
32079082.0, 32078795.0, 32078935.0	32079103.0	0.902384

Correlation between confidence and lift

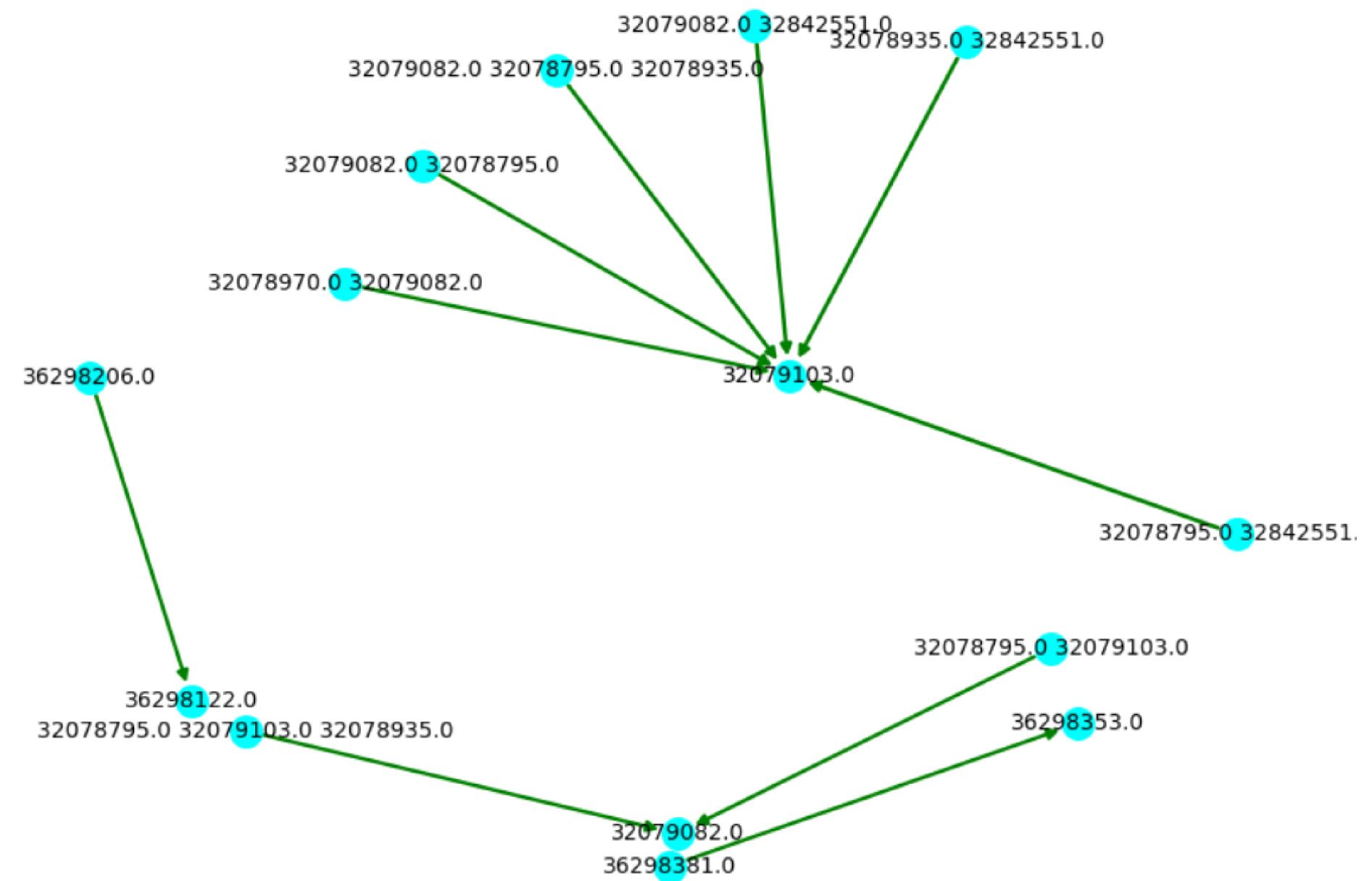


This insightful scatter plot intricately maps the correlation between lift and confidence, utilizing support as both a size and color scale. The varying sizes of data points emphasize association significance, while the color gradient provides an additional layer of depth, guiding strategic decisions in areas such as targeted marketing and product bundling with precision.

MBA

Correlation between confidence and lift

This insightful network graph, focusing on the top 10 confidence-based product associations, spotlights the prominence of product ID **32079103**, frequently paired with various items. The varying edge thickness indicates the strength of these connections, unveiling potential **cross-selling opportunities**. Leveraging the Kamada-Kawai layout, it unveils distinct patterns, informing strategic decisions for targeted marketing and shelf optimization, ultimately maximizing revenue.

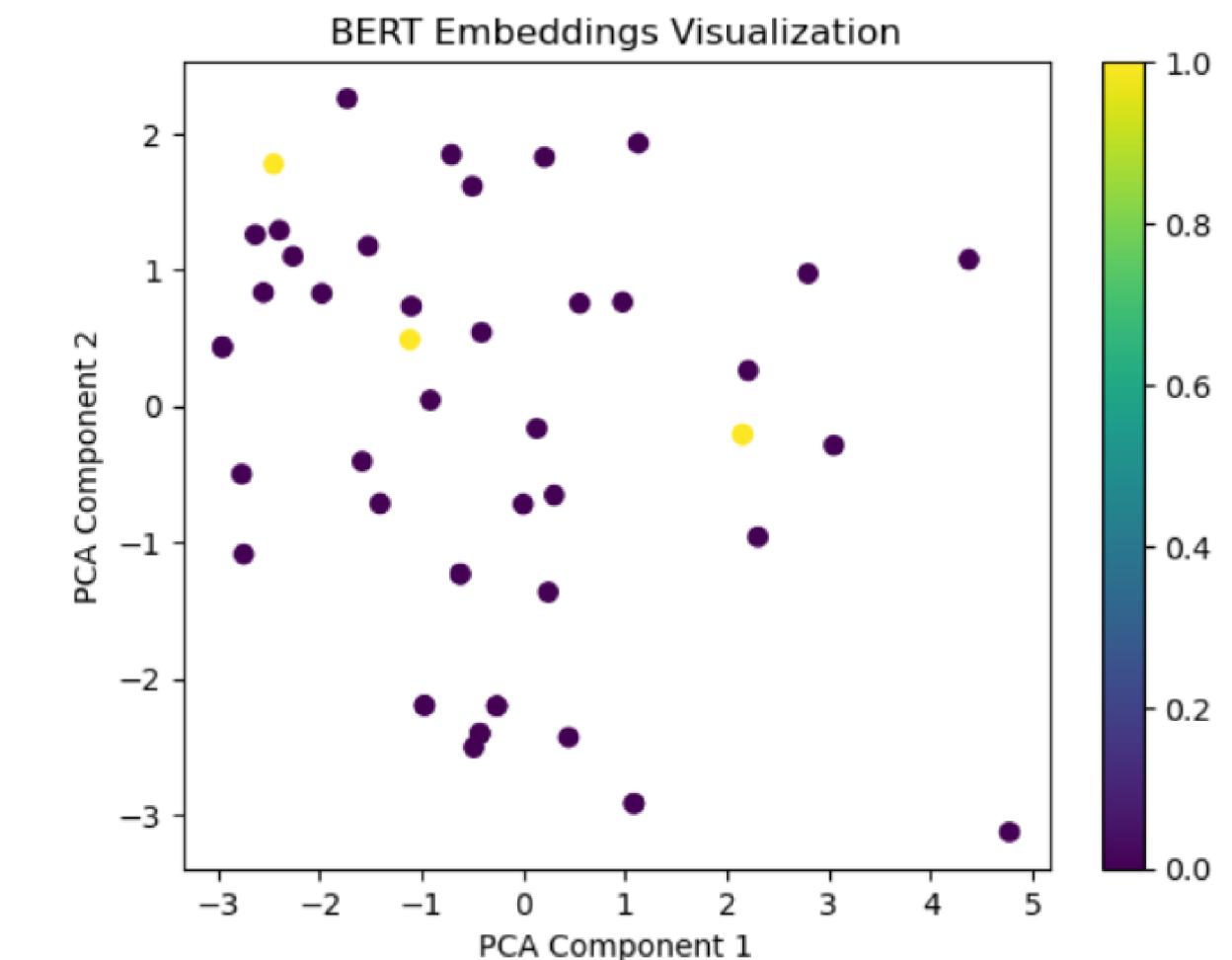


SENTIMENT ANALYSIS

Sentiment analysis involves employing natural language processing (NLP) and machine learning methods to discern and extract the emotional tone, attitude, or sentiment conveyed in a text or message. In this research, each review is categorized as either positive, negative, or neutral.

Our sentiment analysis employing **BERT**-Base-Uncased remarkable outcomes:

- Test Accuracy: **0.83**, signifying the model's adeptness in accurately classifying reviews as positive, negative, or neutral.



DATA DRIVEN ACTIONS

CRM Optimization	Optimize customer relationship management practices to cultivate long-lasting, profitable relationships and unlock sales opportunities.
Buyer Personas	Create comprehensive customer profiles to deeply understand their needs and desires, enabling personalized and tailored experiences.
Multichannel Engagement	Strategically leverage multiple communication channels to engage and captivate customers effectively
Local Advertising Focus	Channel resources towards impactful regional advertising campaigns, gaining a competitive edge over national approaches.

THANK YOU