DataVerse Africa

# RizoStar Market Entry Strategy – Data Driven Insights & Forecasts

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**DataVerse Africa Challenge**

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# Problem Statement

- **Context:** The competitive landscape for rice brands in West Africa is becoming increasingly challenging, with several established players dominating the market. AfriFoods Ltd aims to launch RizoStar, a premium rice product, to capture market share and meet growing consumer demand for quality rice.
- **Issue:** The available sales data is messy and inconsistent, with numerous inaccuracies and missing values. This hampers the ability to gain clear insights into market dynamics, competitor performance, and consumer preferences.
- **Impact:** Failing to effectively analyze this data could result in suboptimal launch strategies, missed revenue opportunities, and an inability to compete against rival brands. Thus, it is essential to clean the dataset, extract valuable insights, and develop a robust plan for RizoStar's successful market entry.

# Project Objectives

**Primary Objective**:

- To analyze and clean the rice sales dataset to extract actionable insights that inform the launch strategy for RizoStar, ensuring a competitive edge in the West African market.

**Secondary Objectives:**

- To identify optimal launch cities based on sales performance and customer sentiment.
- To recommend an ideal pricing strategy that positions RizoStar competitively against rival brands.
- To develop a predictive model to forecast potential revenue in key cities, aiding in decision-making for resource allocation and marketing strategies.

# Methodology

1.Standardization:

- Removed whitespace and standardized case for uniformity.

2.Fixing Typos:

- Corrected brand names (e.g., "Caprce" to "Caprice").
- Standardized grain types (e.g., "basmati" to "Basmati").Fixed city names (e.g., "Kumaci" to "Kumasi").

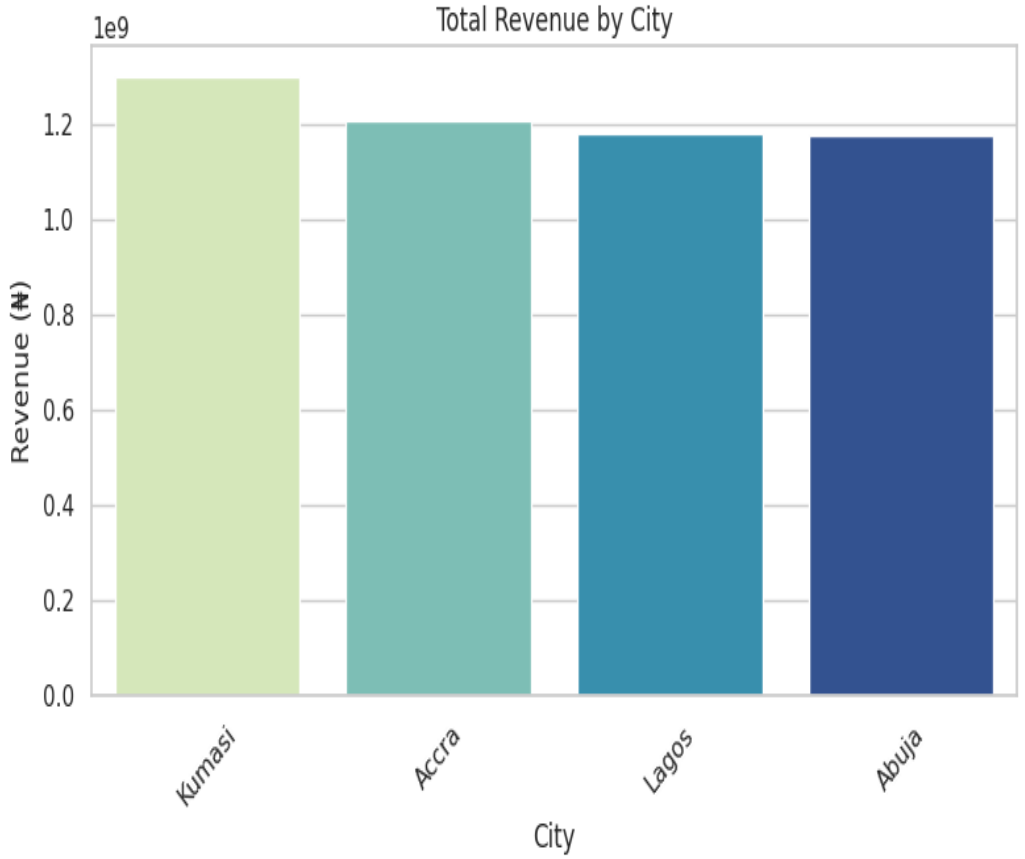
3.Handling Missing Values:

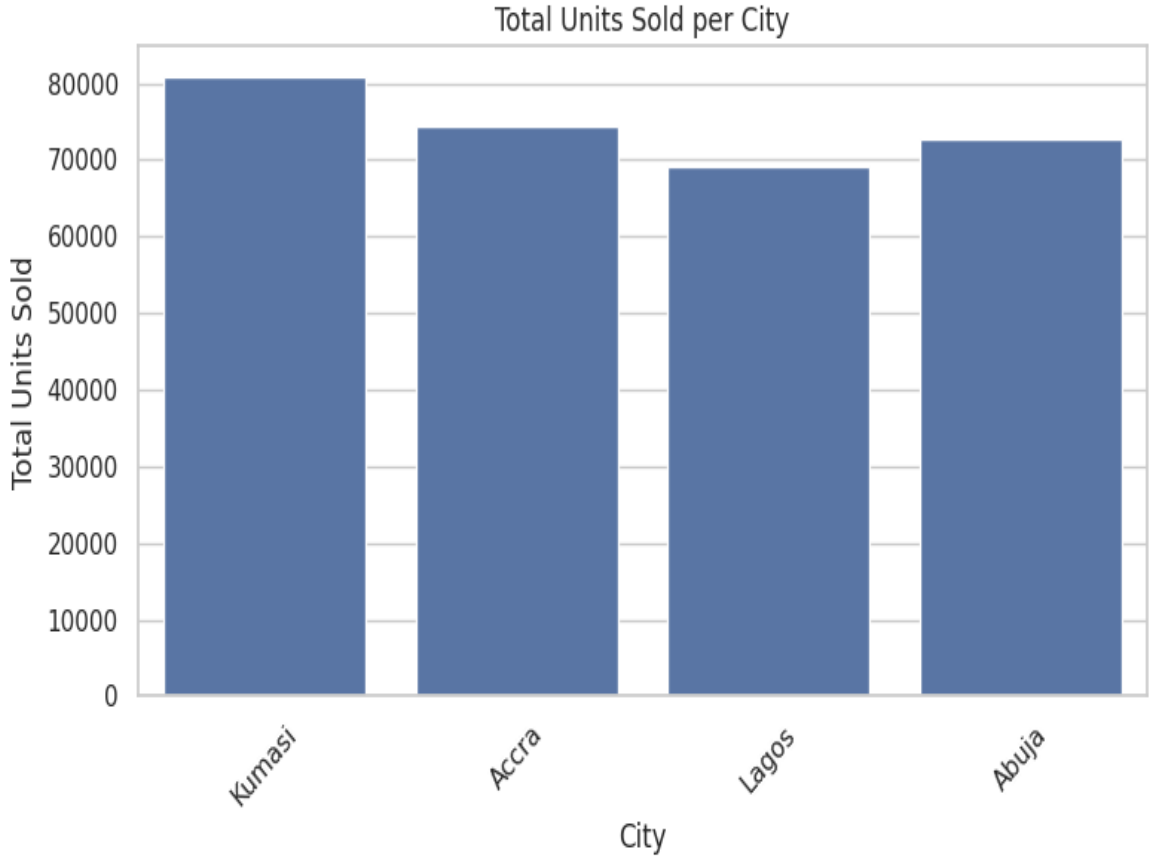
- Addressed 43 missing values in "Price per Bag" using averages based on brand and grain type.

4.Feature Engineering:

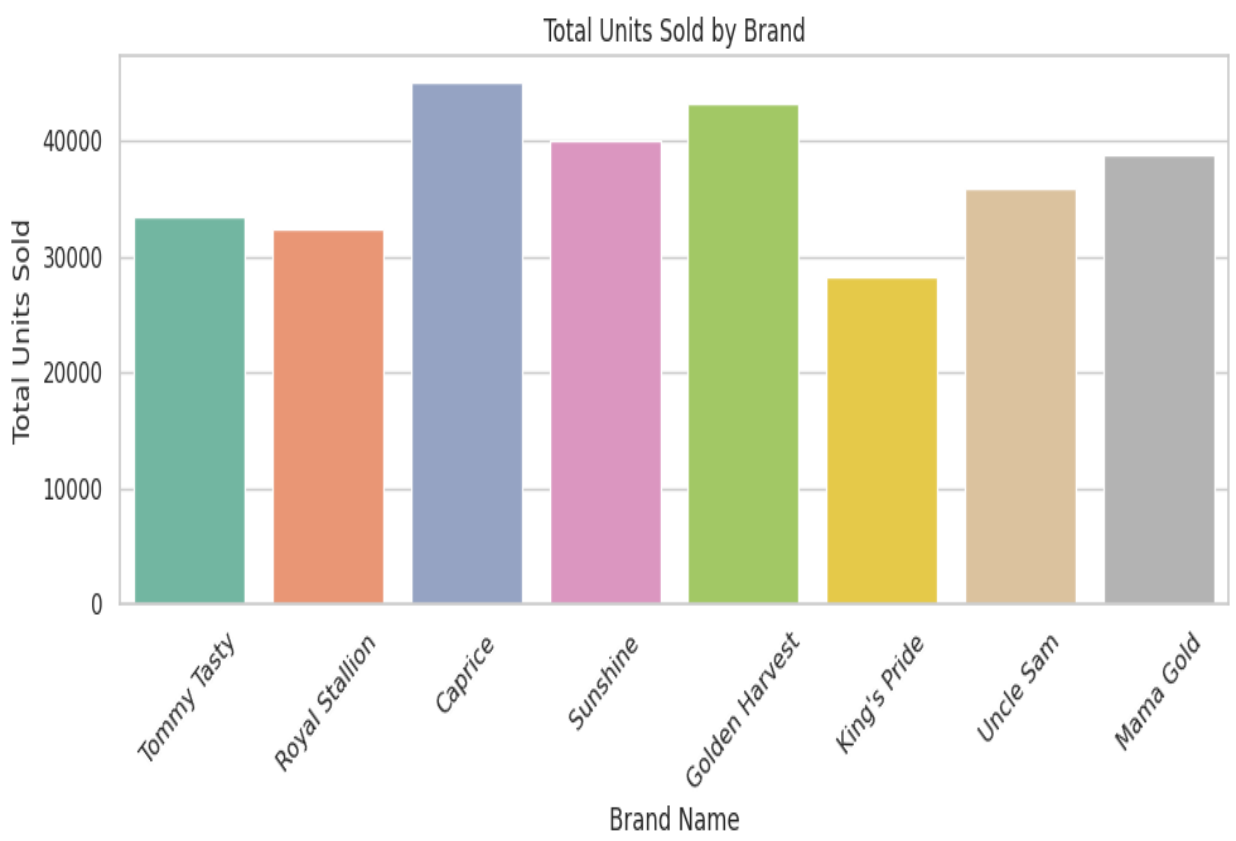
- Created new features, including revenue calculations and indicators for premium grains.

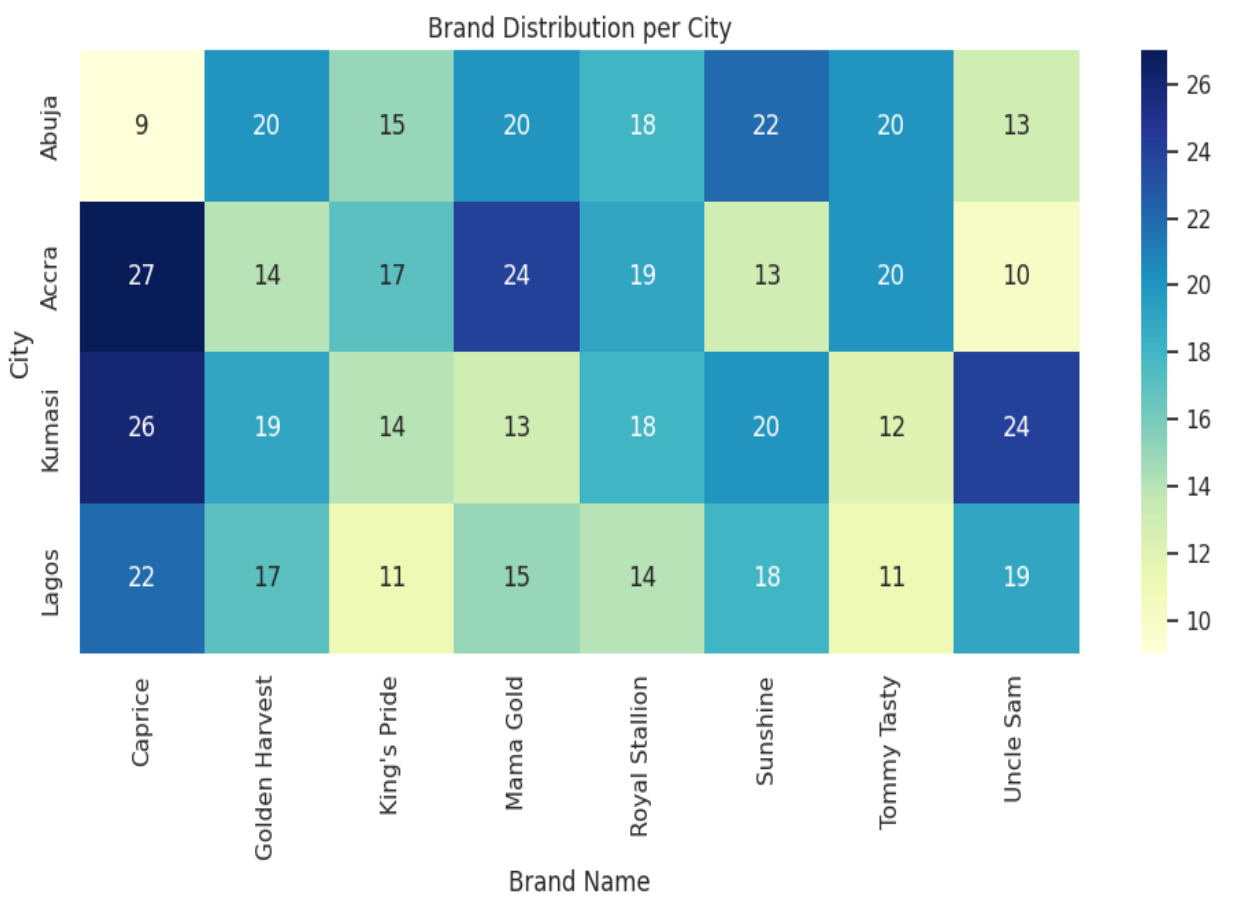
# Data Insights



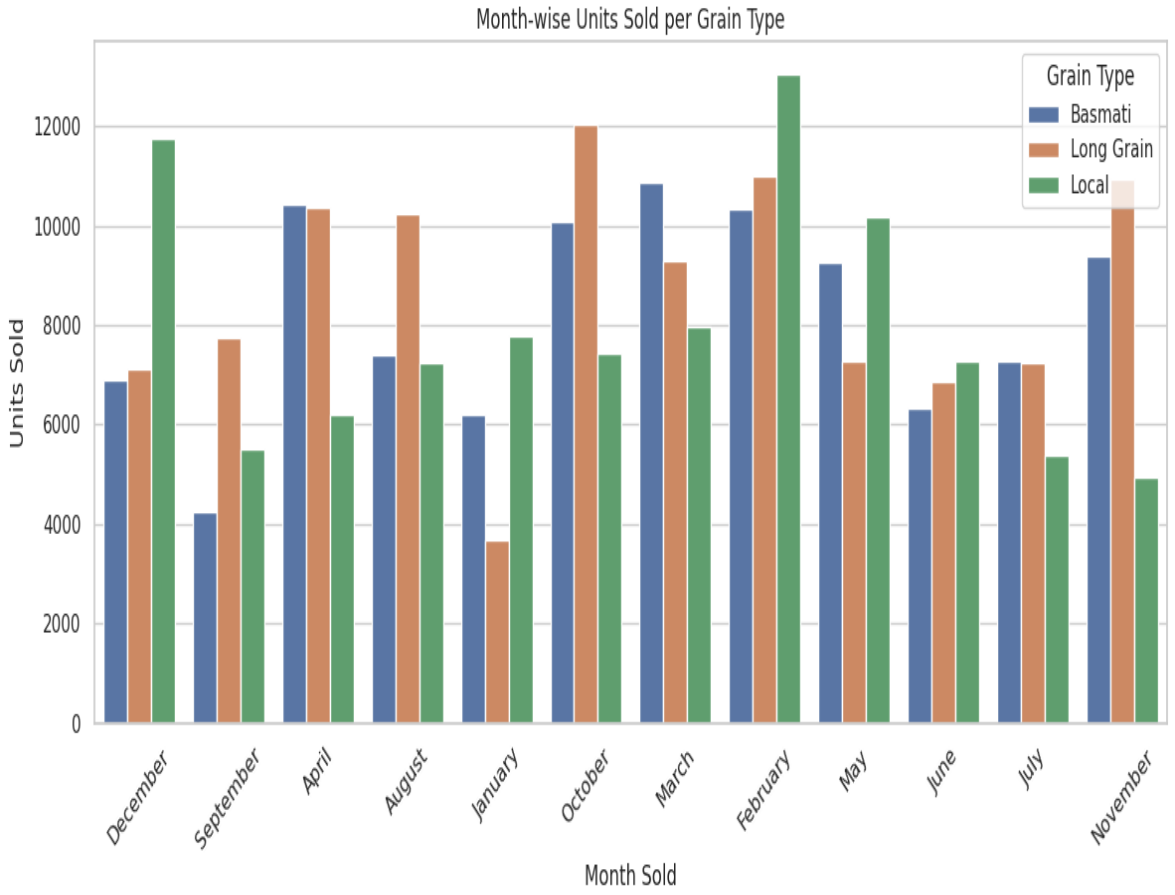



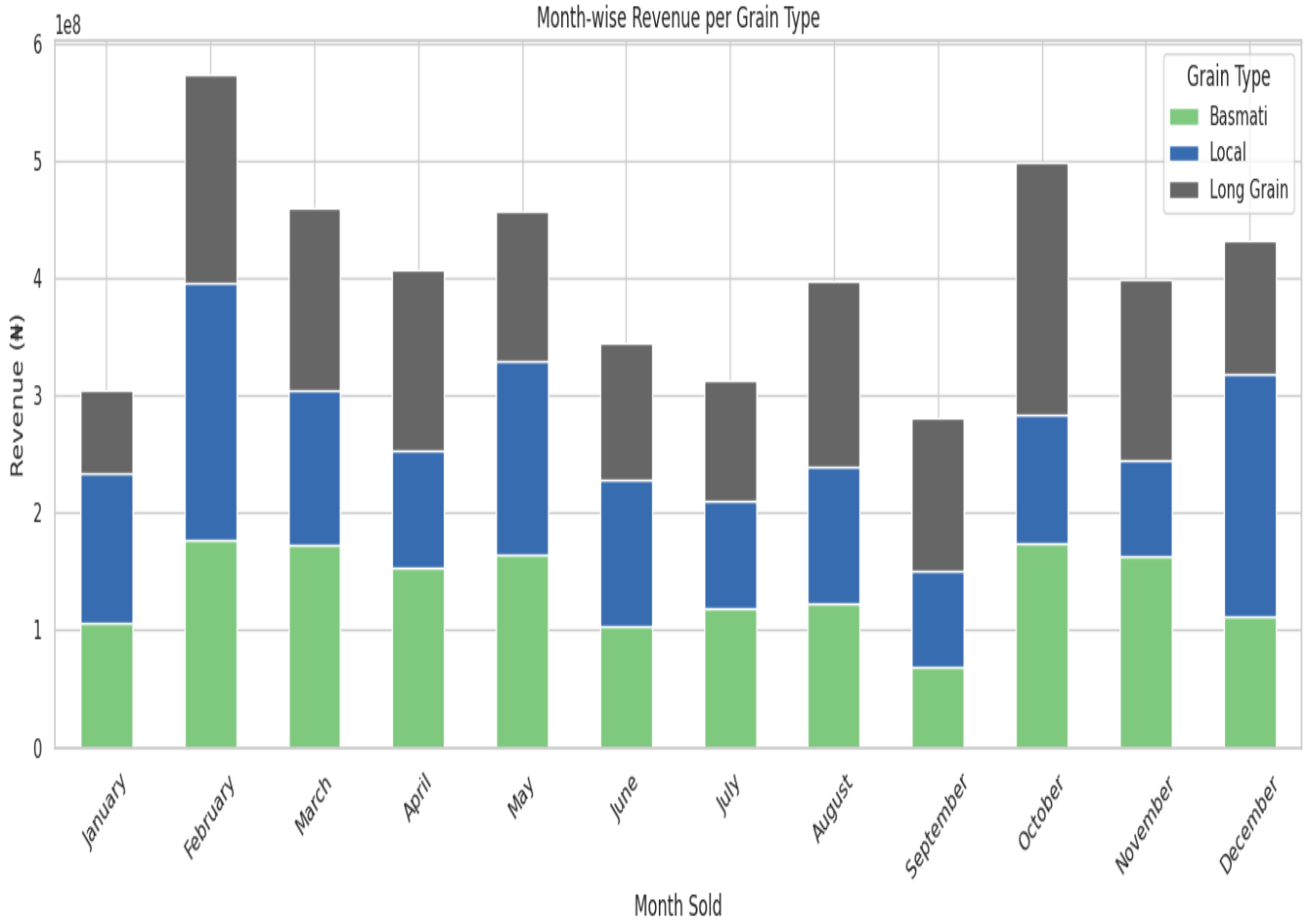

The analysis of total revenue by city reveals that Kumasi, Accra, and Abuja are the leading markets, each generating approximately 1.2 billion Naira in revenue. Lagos closely follows, highlighting the strong demand for rice across these urban areas. In terms of total units sold, Kumasi, Accra, and Abuja again demonstrate robust performance, each selling over 7,000 units. Lagos shows a slightly lower figure but remains competitive. This data underscores the importance of targeting these key cities for RizoStar's launch, as they represent significant sales potential in the West African rice market.



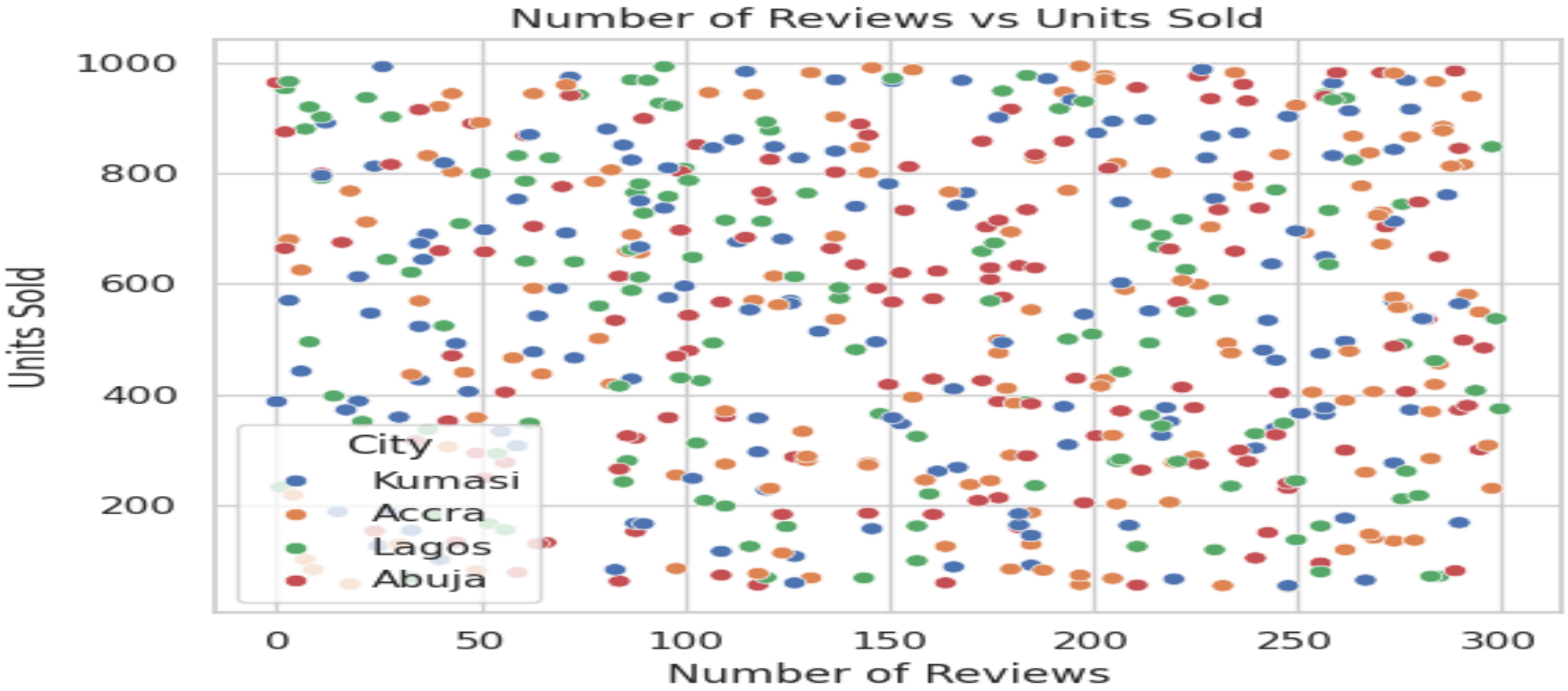




The total units sold by brand indicate that Caprice leads the market with over 40,000 units sold, followed closely by Golden Harvest and Tommy Tasty. This suggests a strong consumer preference for these brands, highlighting potential competition for RizoStar.The brand distribution per city further illustrates market dynamics, with Accra showing a diverse brand presence, particularly favoring Caprice. Kumasi and Lagos also display notable sales for various brands, indicating that RizoStar must strategically position itself in these cities to effectively compete against established names. Understanding these preferences will be crucial for tailoring marketing efforts and product offerings.




The monthly analysis of units sold by grain type reveals that Basmati consistently outperforms both Long Grain and Local varieties, with peak sales occurring in February. This trend indicates a strong consumer preference for Basmati, suggesting that RizoStar could benefit from emphasizing this grain type in its offerings. In terms of revenue, the month-wise breakdown shows a similar pattern, with Basmati generating the highest revenue across most months. Notably, February stands out as the month with the highest revenue, driven by strong sales. This insight suggests that launching RizoStar with a focus on Basmati could align well with consumer demand and maximize revenue potential during peak months.

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Correlation Coefficient: -0.036, P-Value: 0.4005
 Hypothesis Accepted: No significant relationship found between Number of reviews and units sold.
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The scatter plot examining the relationship between the number of reviews and units sold reveals a correlation coefficient of -0.036, with a p-value of 0.4005. This indicates no significant relationship between the two variables. Despite variations in the number of reviews across cities—Kumasi, Accra, Lagos, and Abuja—units sold do not appear to be influenced by the volume of reviews received. This suggests that other factors may drive sales, and focusing solely on accumulating reviews may not significantly impact unit sales for RizoStar.

# Predictive Model Results

## 1.Data Preparation

- Encoding Categorical Variables: Categorical features such as 'City' and 'Grain Type' were encoded using One-Hot Encoding. This method creates binary columns for each category, allowing the model to interpret these variables effectively while avoiding the pitfalls of ordinal encoding.

## 2. Feature Selection

- Features and Target Variables:Features (X):'Price per Bag (Naira)''Units Sold' (representing expected bags sold)Encoded categorical variables for cities and grain types.Target (y): Revenue.

## 3. Data Splitting Train-Test Split:

- The dataset was divided into training (80%) and testing (20%) sets to evaluate model performance accurately.

## 4. Model Training

- Model Used: Linear Regression was selected for its effectiveness in predicting continuous variables.
- Training Process: The model was trained on the training dataset using the selected features.

## 5. Predictions

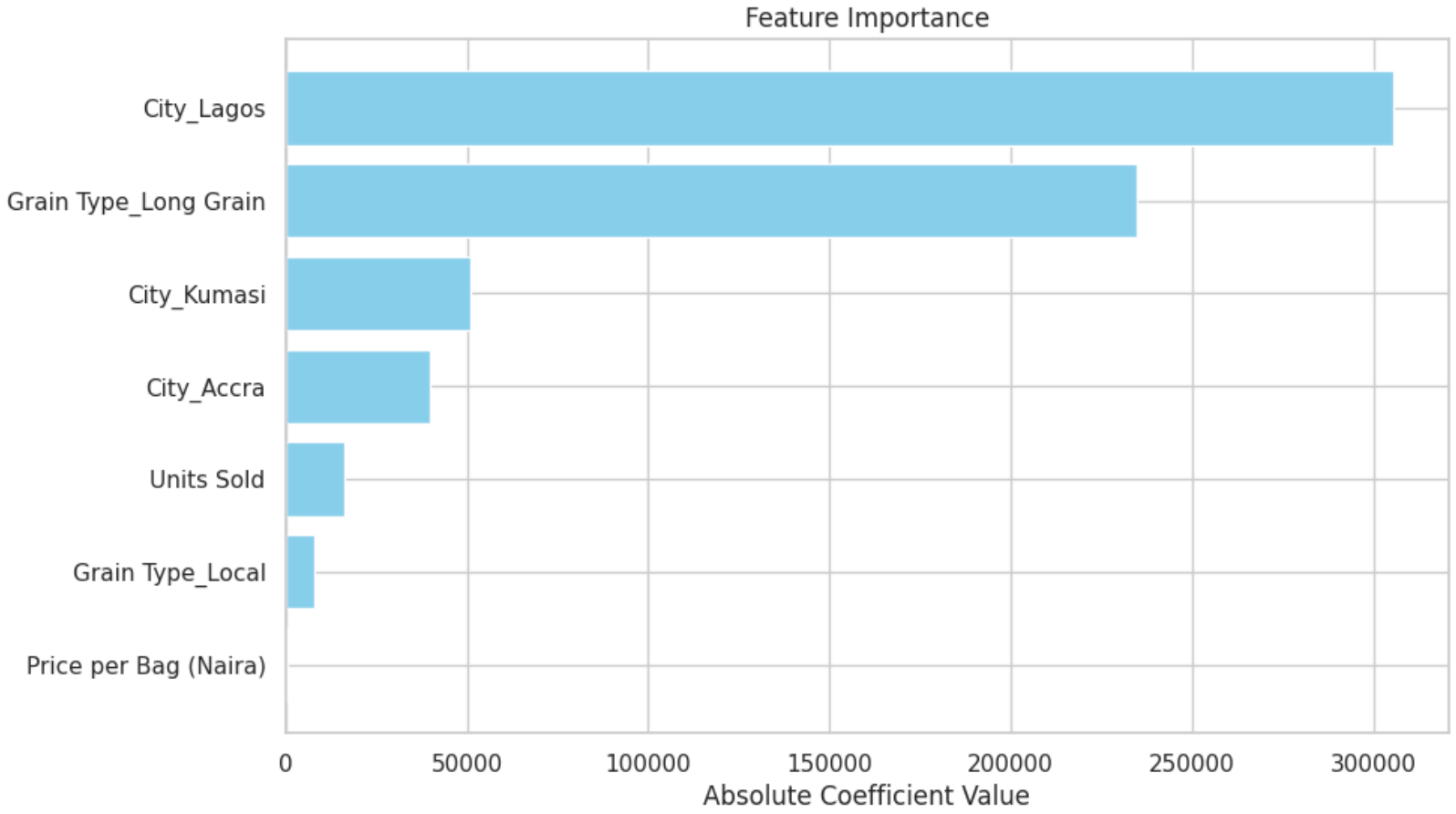
- Predictions Generated: The trained model was used to predict total revenue on the test dataset.

## 6. Performance Evaluation Metrics Used:

- RMSE (Root Mean Squared Error): Measures the average error in predictions, indicating the model's accuracy.
- MAE (Mean Absolute Error): Represents the average absolute deviation from actual values, providing insight into prediction accuracy.
- $R^2$ (Coefficient of Determination): Indicates the proportion of variance in the target variable that the model can explain

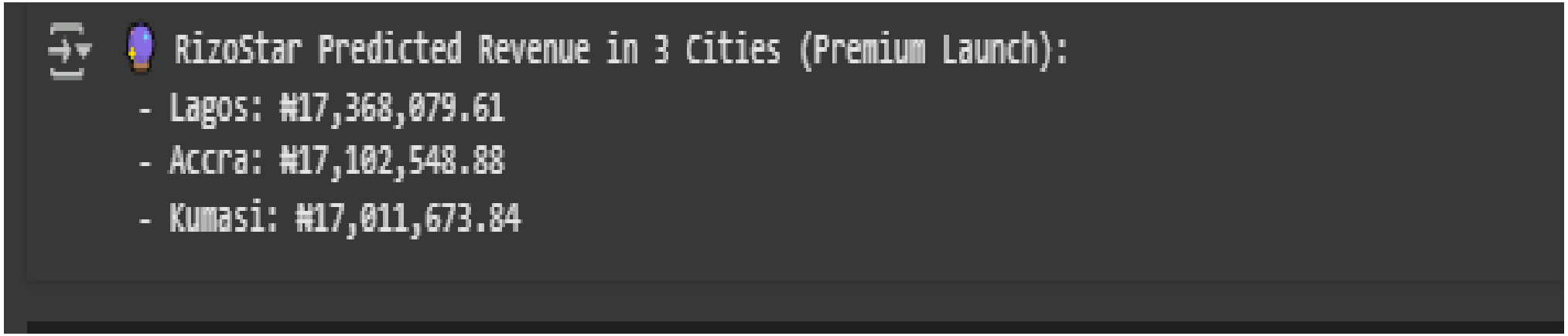
# Model Results


The model metrics indicate a strong performance in predicting total revenue. The RMSE (Root Mean Squared Error) value of 2,252,446,670,128.18 suggests that, on average, the model's predictions deviate from the actual revenue by this amount. While this number appears large, it is crucial to consider it in the context of the scale of the revenue values being predicted. The MAE (Mean Absolute Error) of 1,132,124.43 represents the average absolute error in the model's predictions, providing a more interpretable measure of accuracy. This value indicates that, on average, the predictions are off by about 1.13 million, which is relatively small compared to the overall revenue figures. The $R^2$ (Coefficient of Determination) value of 0.928 signifies that approximately 92.8% of the variance in total revenue can be explained by the features used in the model. This high $R^2$ value demonstrates that the model effectively captures the relationship between the input features (such as price, expected bags sold, city, and grain type) and the target variable, making it a reliable tool for predicting revenue.




The feature importance visualization highlights the relative contributions of various factors in predicting total revenue. City_Lagos stands out as the most influential feature, indicating that sales in Lagos significantly drive revenue. Other important features include Grain Type_Long Grain and City_Kumasi, both of which also impact sales considerably. The Units Sold feature is crucial, as expected sales directly correlate with revenue, while Grain Type_Local and Price per Bag (Naira) have a lesser effect

# Revenue Forecasts For 3 cities




The predicted revenue for the RizoStar premium launch across three key cities showcases strong potential sales figures. In Lagos, the expected revenue is approximately ₦17,368,079.61, indicating a robust market presence. Accra follows closely with ₦17,102,548.88, reflecting significant demand in the Ghanaian market. Lastly, Kumasi is projected to generate around ₦17,011,673.84, demonstrating promising sales potential. These figures highlight the viability of the premium product launch in these urban centers, suggesting strategic opportunities for growth and investment.

# Tactical Strategy(Recommendations)

## 1. Launch City Recommendation

- City: **Lagos**
- Although Kumasi has historically generated high revenue, our predictive model indicates that Lagos offers the highest expected revenue for the RizoStar launch, albeit by a small margin. This urban market not only demonstrates substantial purchasing power for premium products but also represents a high-growth opportunity, making it an ideal testbed for RizoStar's debut.

## 2.Launch Price

- Ideal Launch Price: **₦17,846.26**
- This price is set 10% above the average market price, positioning RizoStar as a premium offering while remaining competitive in the market.

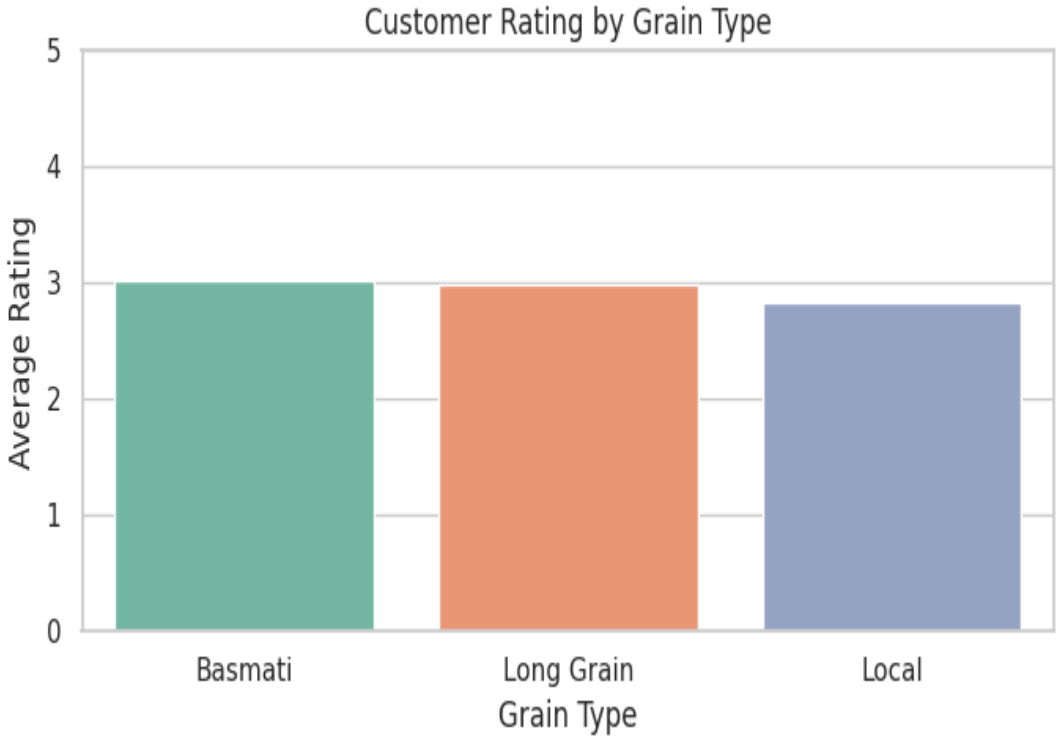
## 3. Preferred Grain Type

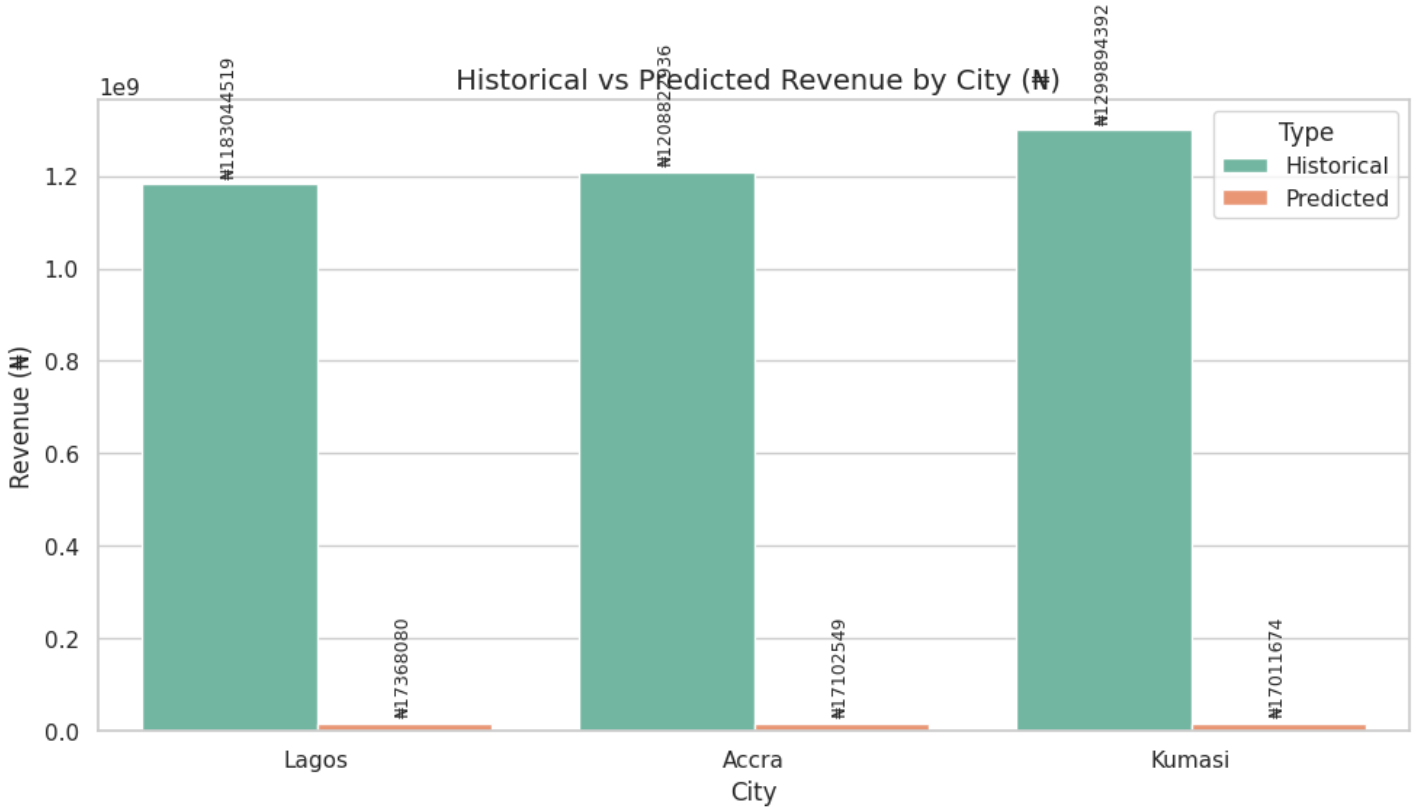
- Grain Type: **Basmati**
- Basmati has historically yielded high revenue and customer satisfaction, as evidenced by its strong average rating compared to other grain types. This selection aligns with customer preferences and market trends.

# Justifications to Strengthen the Case:

- **Pricing Power:** Customers in Lagos are likely to pay more per unit, as the model has identified significant price–city interactions that favor higher pricing in this market.
- **Mature Premium Market:** Lagos is the most developed market for premium products, aligning perfectly with RizoStar's positioning as a high-quality offering.
- **Margin Considerations:** Even a slight revenue advantage is crucial in tight-margin scenarios, and Lagos’s lead over Accra and Kumasi underscores its strategic importance for the launch.

# Visual Data Insights Supporting Strategic Choices




The charts provide compelling evidence for selecting Basmati rice as the launch grain type and Lagos as the ideal city for RizoStar. The first chart demonstrates that Basmati consistently receives the highest average customer rating, reinforcing its status as the preferred choice among consumers. The second chart compares historical and predicted revenue for Lagos, Accra, and Kumasi. While Kumasi leads in historical revenue, our predictive model indicates that Lagos offers the highest expected revenue for the RizoStar launch, highlighting its potential as a high-growth urban market with pricing power for premium products. Together, these visuals validate our strategic decisions for the RizoStar launch.

# 📣 Brand Message:

- RizoStar is designed for upwardly mobile families in emerging premium markets like Lagos. While Kumasi has historically led rice sales, our predictive analysis shows Lagos offers the highest launch revenue for premium basmati — a clear sign of untapped value. With top-rated taste and bold pricing, RizoStar brings aroma, quality, and trust to the rising West African consumer.

# Conclusion

- In a nutshell, the market entry strategy for RizoStar is underpinned by comprehensive data analysis and insights that highlight the potential for success in the West African rice market. By focusing on Basmati as the preferred grain type and selecting Lagos as the launch city, we align our strategy with consumer preferences and market dynamics. The predictive model's results reinforce the decision to position RizoStar as a premium offering, capitalizing on Lagos's purchasing power and growth potential. With a well-informed approach, RizoStar is poised to capture significant market share and establish itself as a trusted brand among upwardly mobile families in the region.