```python
import pandas as pd

# Load the dataset
file_path = "nigeria_agricultural_exports.csv"
try:
    dataset = pd.read_csv(file_path)

    # Display basic info and the first few rows
    print("--- Data Info ---")
    dataset.info()

    print("\n--- Data Head (First 5 Rows) ---")
    print(dataset.head())

except FileNotFoundError:
    print(f"Error: The file '{file_path}' was not found.")
except Exception as e:
    print(f"An error occurred: {e}")
```

```
--- Data Info ---
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1000 entries, 0 to 999
Data columns (total 10 columns):
 #   Column               Non-Null Count  Dtype
---  ------               --------------  -----
 0   Product Name         1000 non-null   object
 1   Company              1000 non-null   object
 2   Export Country       1000 non-null   object
 3   Date                 1000 non-null   object
 4   Units Sold           1000 non-null   int64
 5   unit_price           1000 non-null   float64
 6   Profit per unit      1000 non-null   float64
 7   Export Value         1000 non-null   float64
 8   Destination Port     1000 non-null   object
 9   Transportation Mode  1000 non-null   object
dtypes: float64(3), int64(1), object(6)
memory usage: 78.3+ KB

--- Data Head (First 5 Rows) ---
  Product Name                                    Company Export
Country  \
0       Rubber                  Farmgate Nigeria Limited
Austria
1     Palm Oil        Prime Agro Exports Nigeria Limited
Germany
2      Cassava                  Farmgate Nigeria Limited
Germany
3       Rubber  Nigerian Export Promotion Council (NEPC)
Belgium
4       Sesame               Nigeria Agro Export Company
```

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France

         Date  Units Sold  unit_price  Profit per unit  Export
Value  \
0  11/16/2023         721    31443.05          5863.92   22670439.05

1    1/8/2021         881    23151.97          5868.73   20396885.57

2  10/14/2020         702    18536.45          5105.01   13012587.90

3  12/31/2022         191    21981.31          7781.54    4198430.21

4  12/19/2022         373    13415.94          9590.95    5004145.62


  Destination Port Transportation Mode
0           Lagos                 Sea
1           Lagos                 Sea
2         Calabar                 Sea
3           Warri                 Sea
4           Lagos                 Sea
```

```python
import pandas as pd
import matplotlib.pyplot as plt

# Load the dataset
file_path = "nigeria_agricultural_exports.csv"
df = pd.read_csv(file_path)

#1. Feature Engineering: Calculate Total Profit
#This is the key metric for overall financial success per transaction.
df['Total Profit'] = df['Profit per unit'] * df['Units Sold']

#2.Analysis: Profit by Product

# A)By Total Profit (Good for farmers/producers seeing total market
value)
product_profit_total = df.groupby('Product Name')['Total
Profit'].sum().sort_values(ascending=False)

# B)By Average Profit per Unit (Good for intermediaries/traders)
product_profit_avg_unit = df.groupby('Product Name')['Profit per
unit'].mean().sort_values(ascending=False)

#3.Analysis: Profit by Country
country_profit_total = df.groupby('Export Country')['Total
Profit'].sum().sort_values(ascending=False)

#4. Print Results
print("--- Analysis Results ---")
```

```python
print("\n--- Top 5 Most Profitable Products (by Total Profit Generated) ---")
print("This shows which products have generated the most profit overall in this dataset.")
print(product_profit_total.head(5))

print("\n--- Top 5 Most Profitable Products (by Average Profit per Unit) ---")
print("This shows which products have the highest profit margins per unit sold.")
print(product_profit_avg_unit.head(5))

print("\n--- Top 5 Most Profitable Export Countries (by Total Profit Generated) ---")
print("This shows which countries are the most lucrative export markets.")
print(country_profit_total.head(5))
```

```
--- Analysis Results ---

--- Top 5 Most Profitable Products (by Total Profit Generated) ---
This shows which products have generated the most profit overall in this dataset.
Product Name
Sesame     4.774870e+08
Cocoa      4.503514e+08
Cashew     4.386243e+08
Cassava    4.165035e+08
Rubber     3.957313e+08
Name: Total Profit, dtype: float64

--- Top 5 Most Profitable Products (by Average Profit per Unit) ---
This shows which products have the highest profit margins per unit sold.
Product Name
Cassava     6451.818667
Sesame      6389.495338
Cashew      6350.190072
Plantain    6117.033033
Palm Oil    6052.441774
Name: Profit per unit, dtype: float64

--- Top 5 Most Profitable Export Countries (by Total Profit Generated) ---
This shows which countries are the most lucrative export markets.
Export Country
Denmark        3.688348e+08
Italy          3.594518e+08
France         3.511391e+08
Austria        3.354688e+08
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Switzerland    3.306843e+08
Name: Total Profit, dtype: float64
```
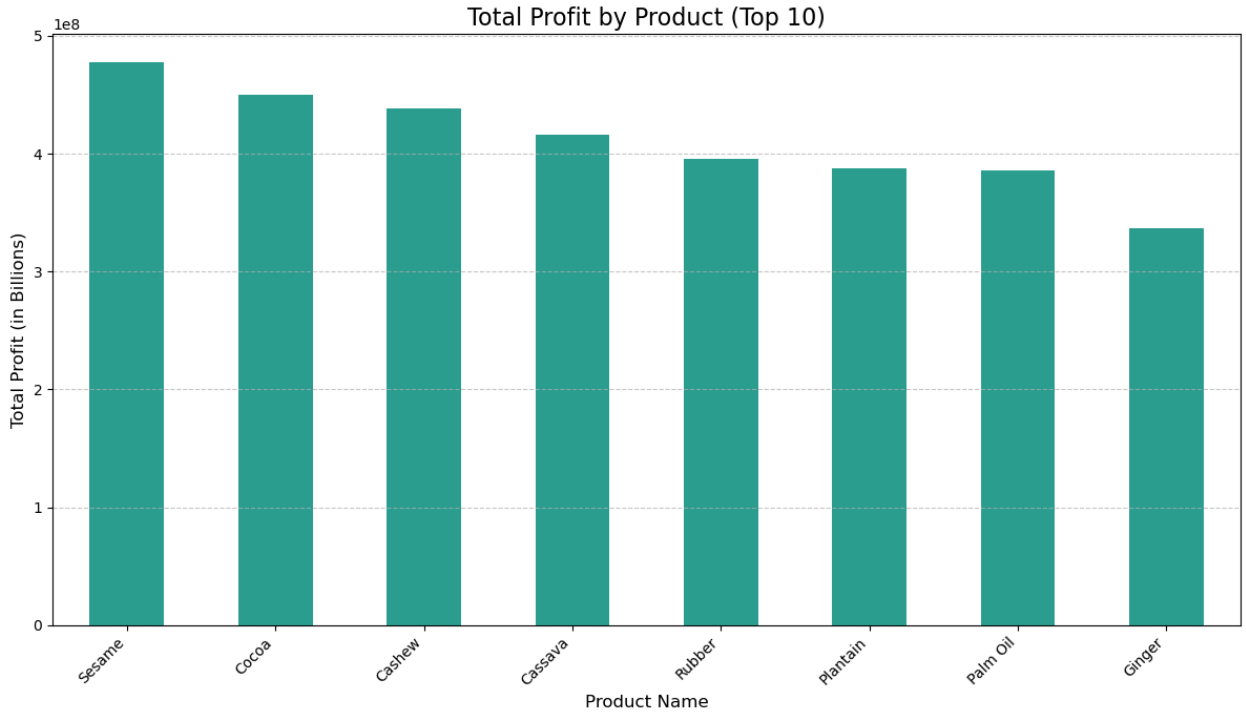

```
# 5.Product Profit Visualization

# A)Plot: Total Profit by Product
#Sorting for the plot
product_profit_total_top10 = product_profit_total.head(10)

plt.figure(figsize=(12, 7))
product_profit_total_top10.plot(kind='bar', color='#2a9d8f')
plt.title('Total Profit by Product (Top 10)', fontsize=16)
plt.ylabel('Total Profit (in Billions)', fontsize=12)
plt.xlabel('Product Name', fontsize=12)
plt.xticks(rotation=45, ha='right')
plt.grid(axis='y', linestyle='--', alpha=0.7)
plt.tight_layout()
plt.savefig('product_profit_total_chart.png')
print("\nSaved chart: product_profit_total_chart.png")
```

```
Saved chart: product_profit_total_chart.png
```




```
# B)Plot: Total Profit by Country
#Sorting for the plot
country_profit_total_top10 = country_profit_total.head(10)

plt.figure(figsize=(12, 7))
```

```
country_profit_total_top10.plot(kind='bar', color='#e76f51')
plt.title('Total Profit by Export Country (Top 10)', fontsize=16)
plt.ylabel('Total Profit (in Billions)', fontsize=12)
plt.xlabel('Export Country', fontsize=12)
plt.xticks(rotation=45, ha='right')
plt.grid(axis='y', linestyle='--', alpha=0.7)
plt.tight_layout()
plt.savefig('country_profit_total_chart.png')
print("Saved chart: country_profit_total_chart.png")
```

```
Saved chart: country_profit_total_chart.png
```