In [1]:
```
import pandas as pd
import matplotlib.pyplot as plt
```

In [2]:
```
df = pd.read_excel('Online Retail.xlsx')
```

In [3]:
```
df.head()
```

Out[3]:

	InvoiceNo	StockCode	Description	Quantity	InvoiceDate	UnitPrice	CustomerID	Cou
0	536365	85123A	WHITE HANGING HEART T-LIGHT HOLDER	6	2010-12-01 08:26:00	2.55	17850.0	Un Kingc
1	536365	71053	WHITE METAL LANTERN	6	2010-12-01 08:26:00	3.39	17850.0	Un Kingc
2	536365	84406B	CREAM CUPID HEARTS COAT HANGER	8	2010-12-01 08:26:00	2.75	17850.0	Un Kingc
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4	536365	84029E	RED WOOLLY HOTTIE WHITE HEART.	6	2010-12-01 08:26:00	3.39	17850.0	Un Kingc

In [4]:
```
df.isnull().sum()
```

Out[4]:
```
InvoiceNo          0
StockCode          0
Description     1454
Quantity           0
InvoiceDate        0
UnitPrice          0
CustomerID     135080
Country            0
dtype: int64
```

In [5]:
```
df = df.dropna(subset=['CustomerID'])
```

In [6]:
```
df.info()
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<class 'pandas.core.frame.DataFrame'>
Index: 406829 entries, 0 to 541908
Data columns (total 8 columns):
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---  ------       --------------   -----
 0   InvoiceNo    406829 non-null  object
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 3   Quantity     406829 non-null  int64
 4   InvoiceDate  406829 non-null  datetime64[ns]
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 7   Country      406829 non-null  object
dtypes: datetime64[ns](1), float64(2), int64(1), object(4)
memory usage: 27.9+ MB
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In [7]:
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df['TotalPrice'] = df['Quantity'] * df['UnitPrice']
```

In [8]:
```
df['Country'].value_counts().head(10).plot(kind='bar')
plt.title('Top 10 Countries by Number of Transactions')
plt.xlabel('Country')
plt.ylabel('Number of Transactions')
plt.show()
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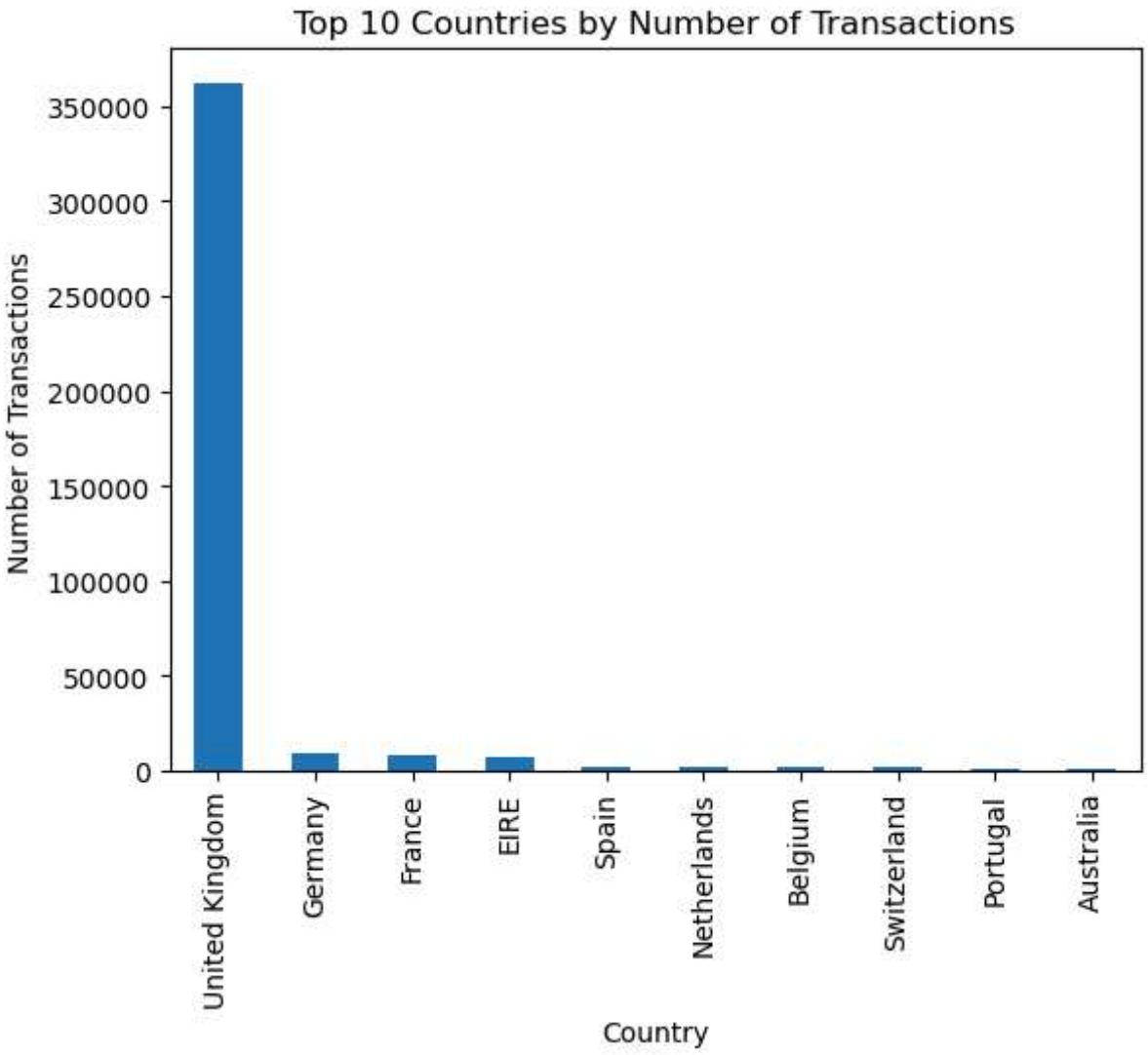

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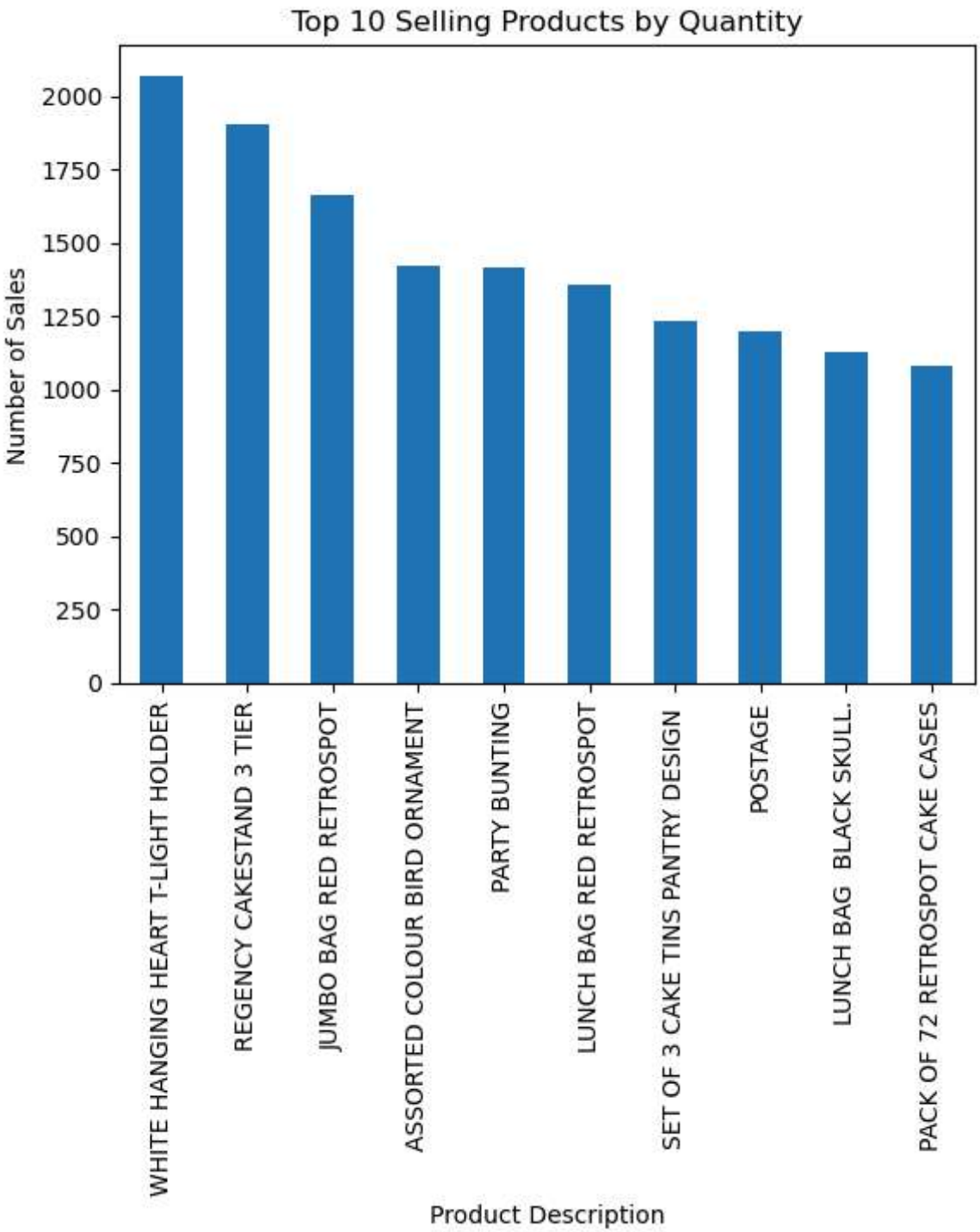

In [10]:
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df.groupby('Description')['TotalPrice'].sum().sort_values(ascending=False).head(10)
plt.title('Top 10 Products by Revenue')
plt.xlabel('Product Description')
plt.ylabel('Total Revenue')
plt.show()
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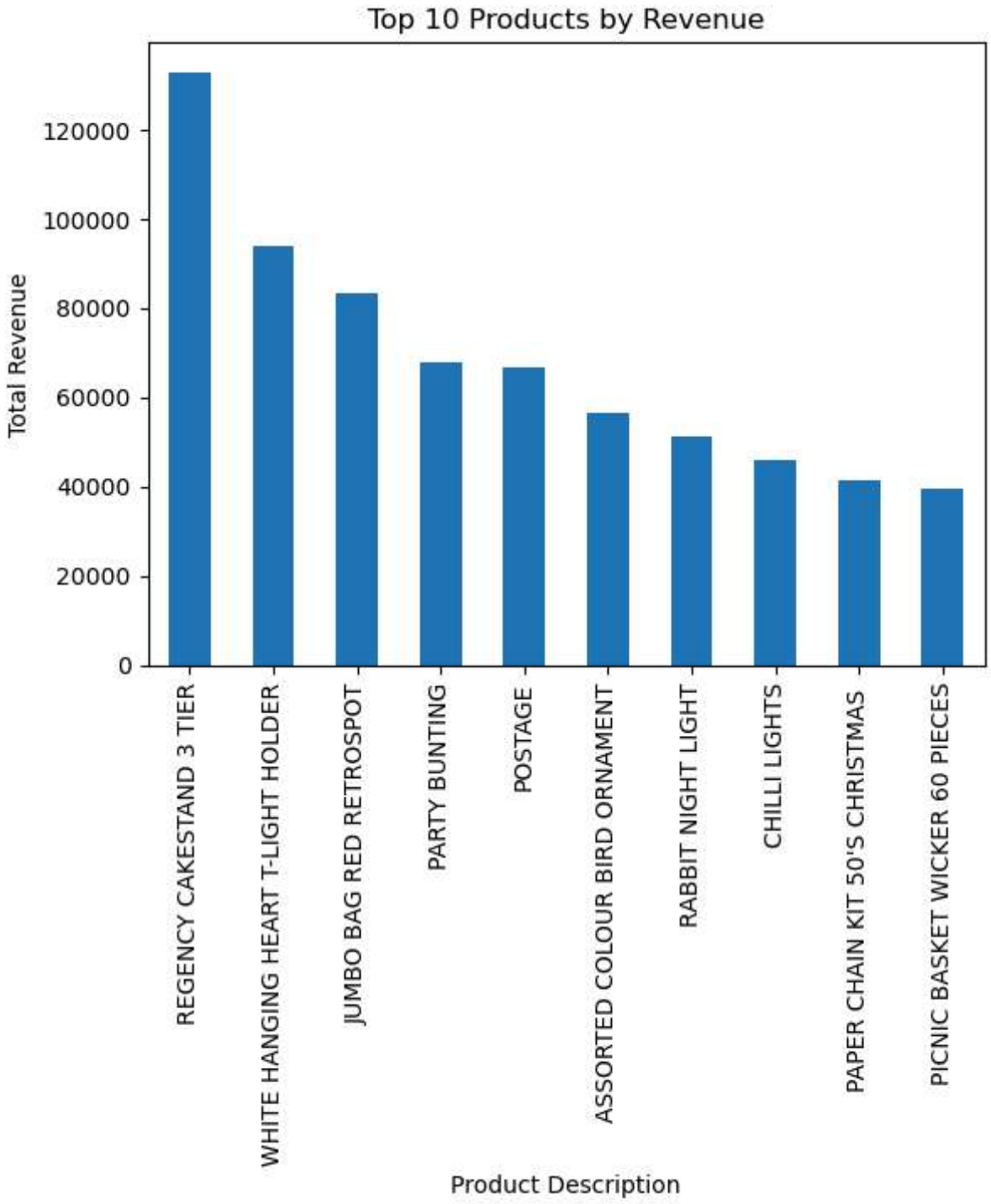
Top 10 Products by Revenue
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20000
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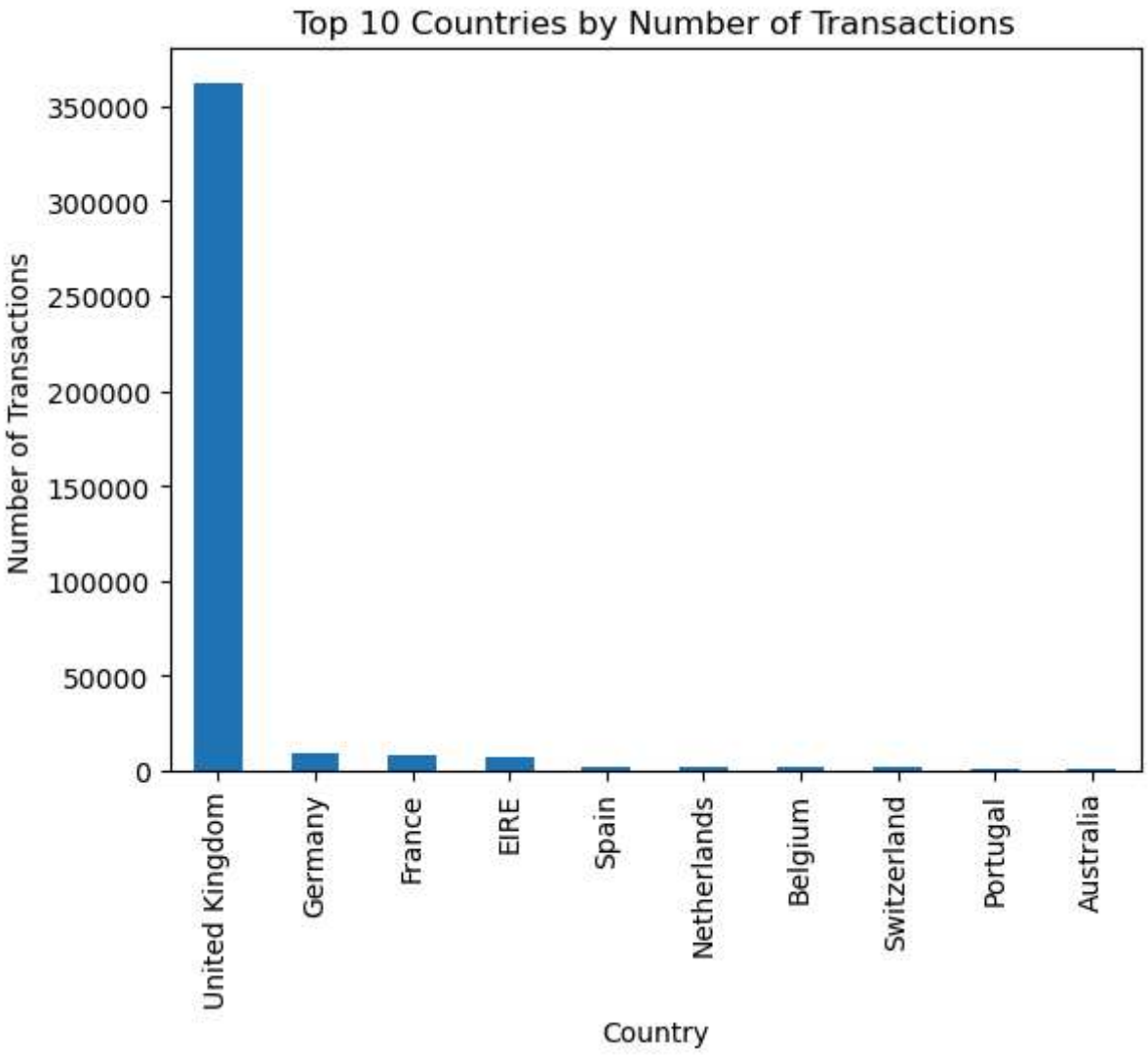

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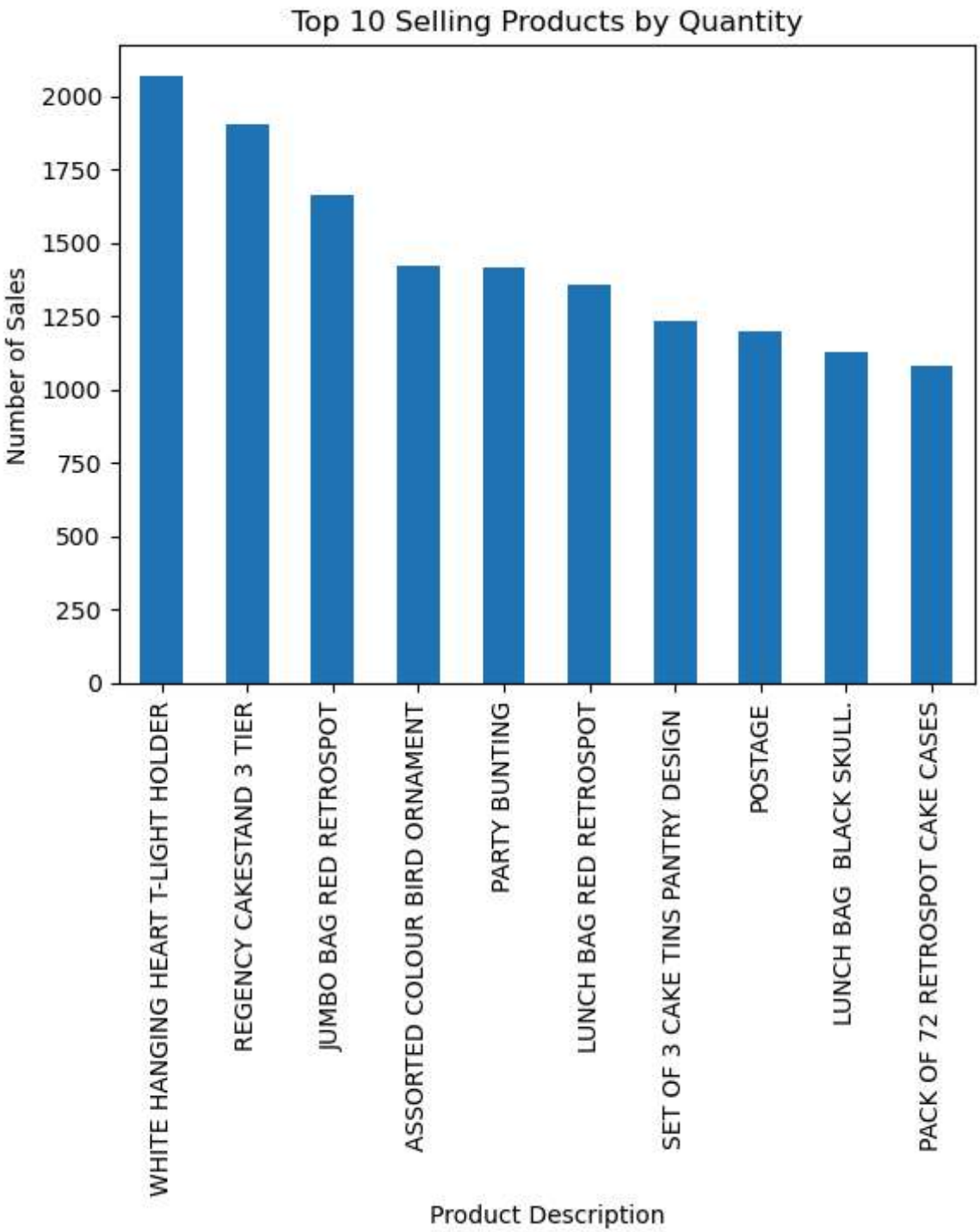

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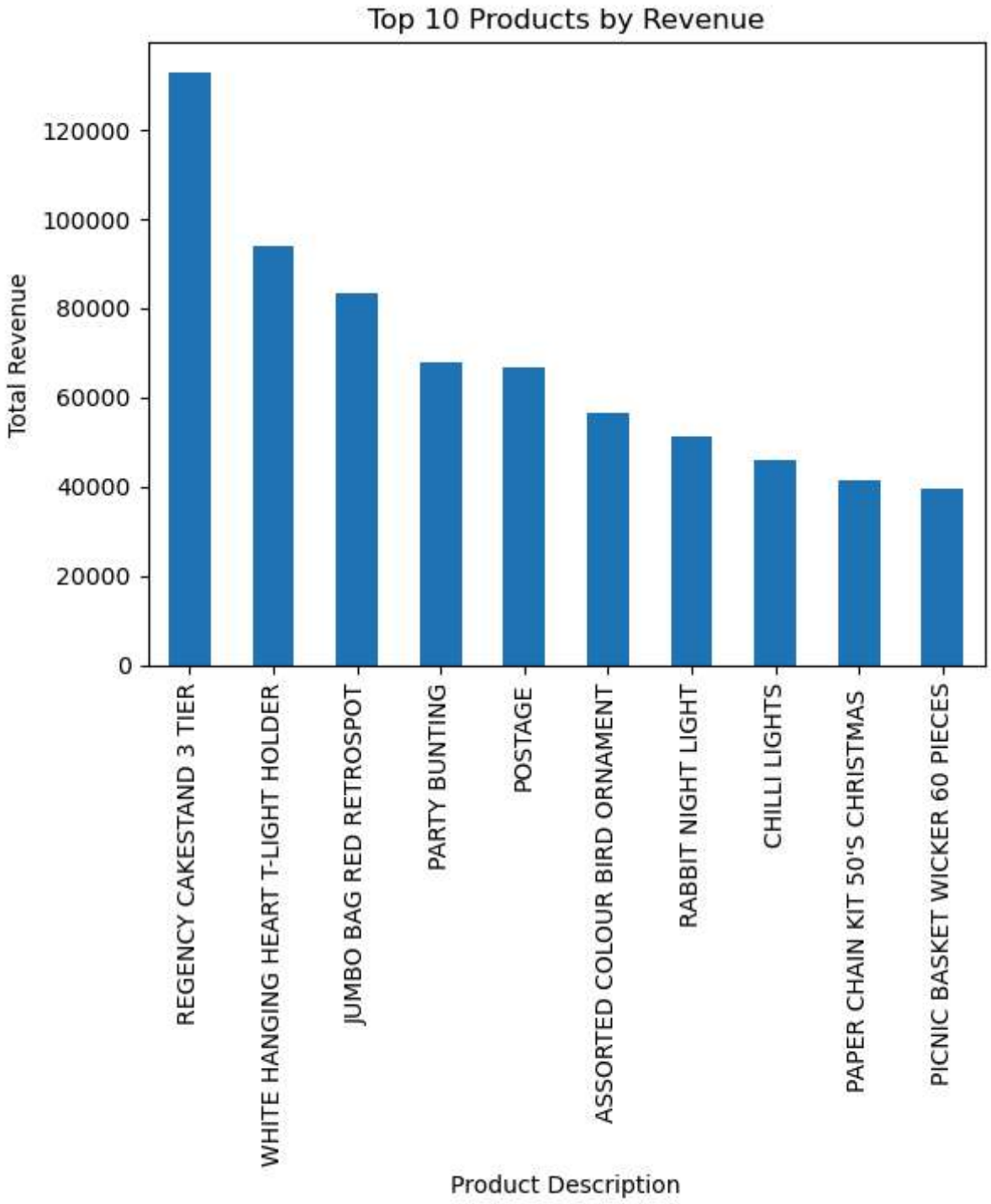
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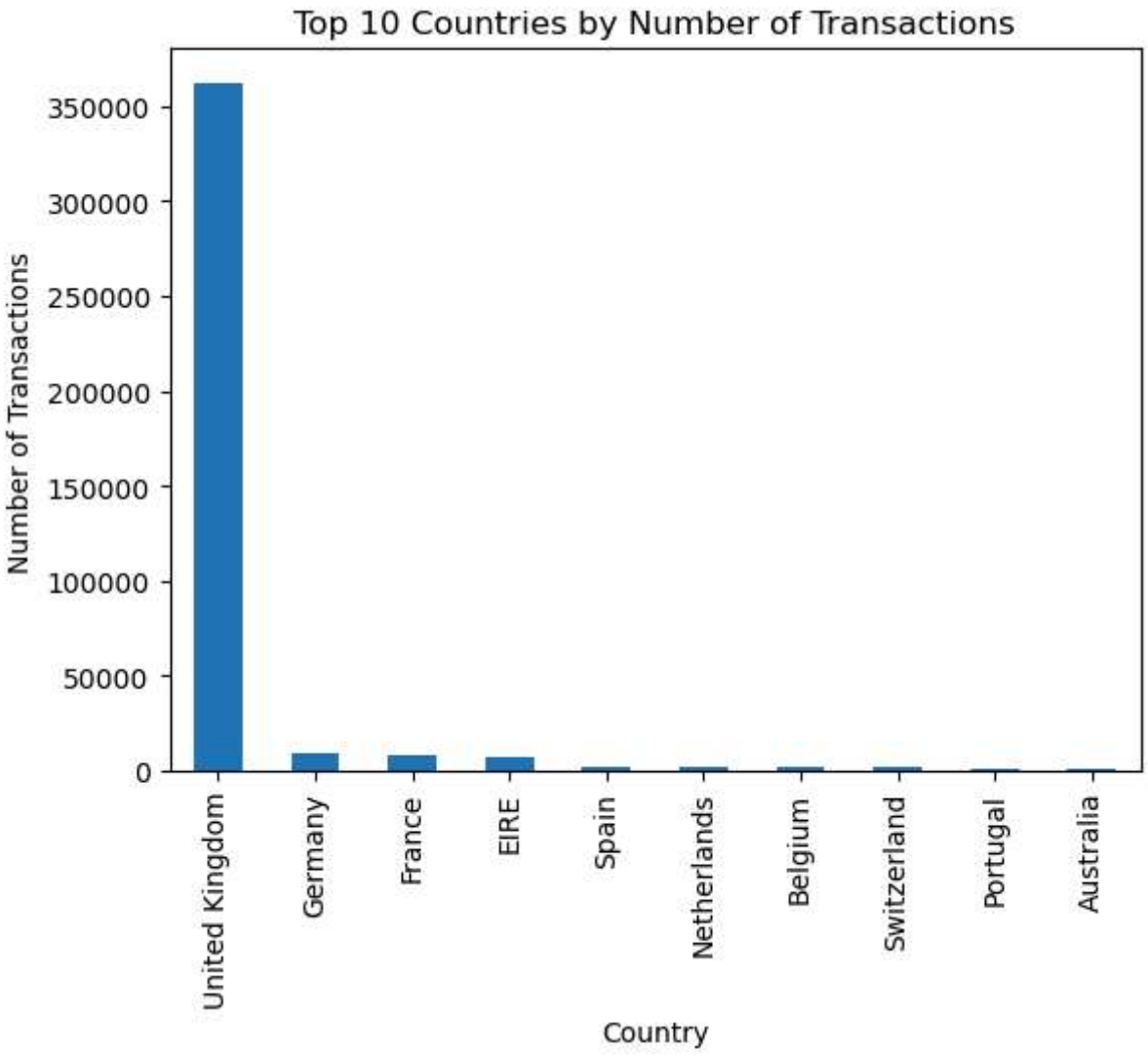

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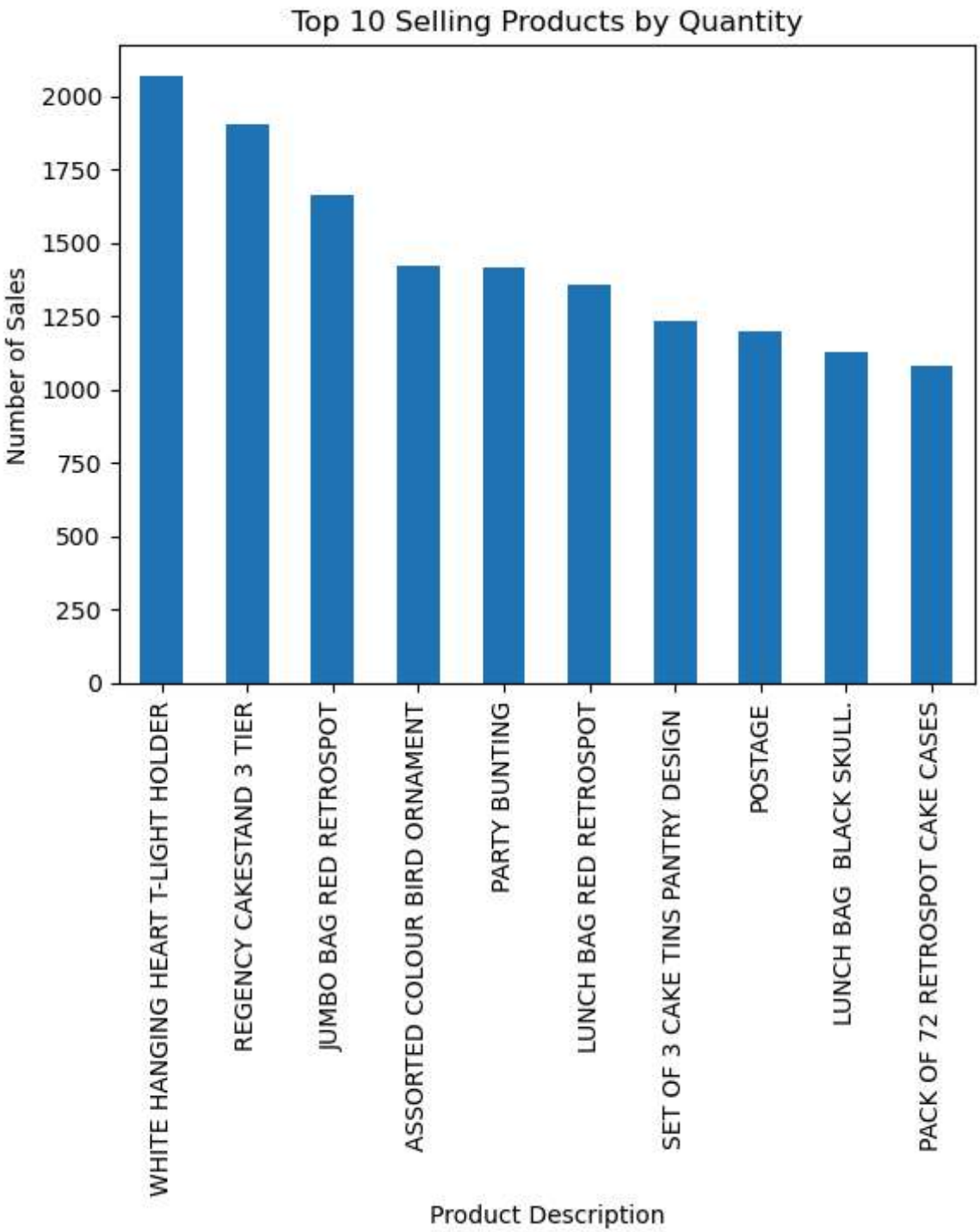

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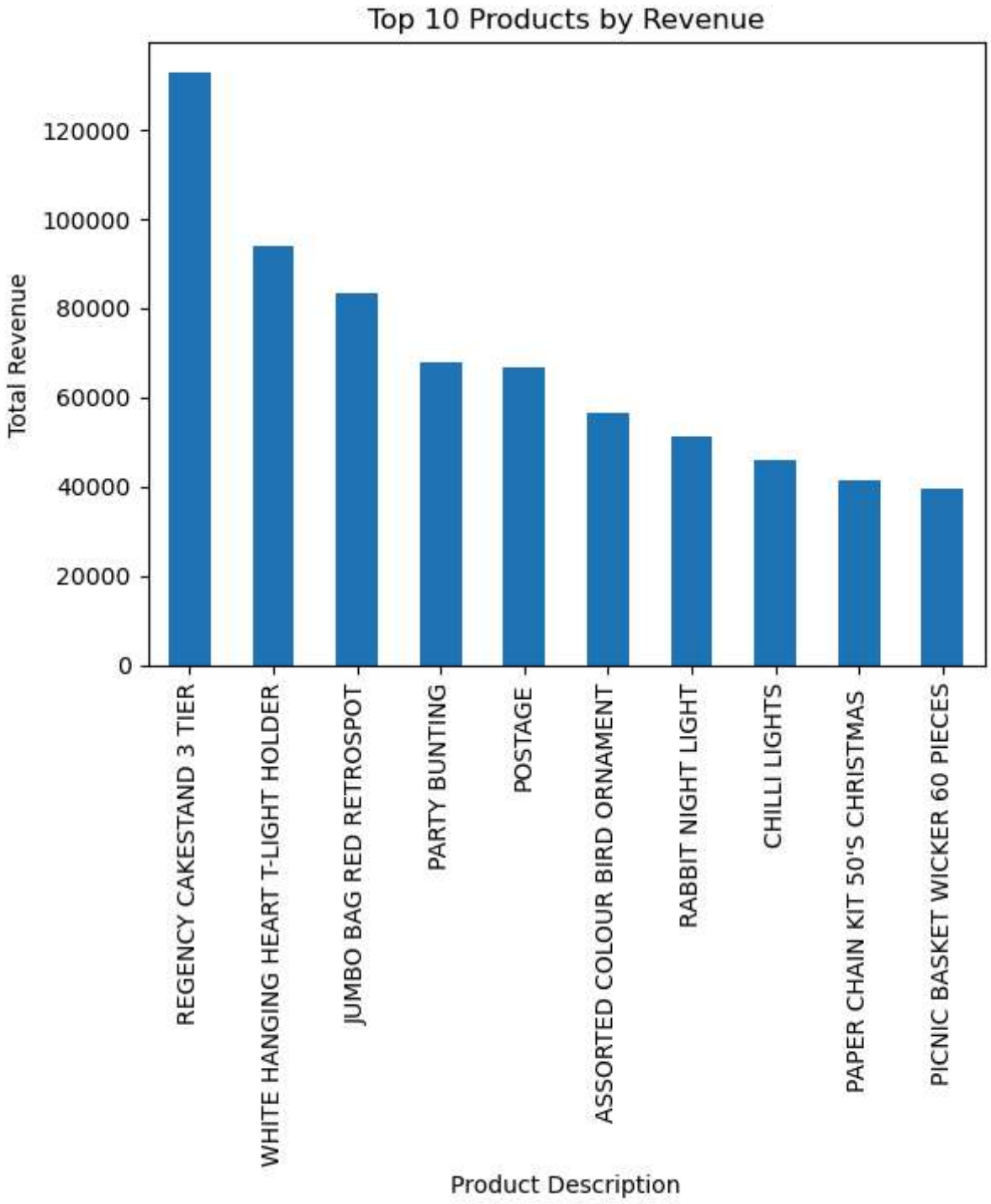
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Out[4]:
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InvoiceNo          0
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CustomerID     135080
Country            0
dtype: int64
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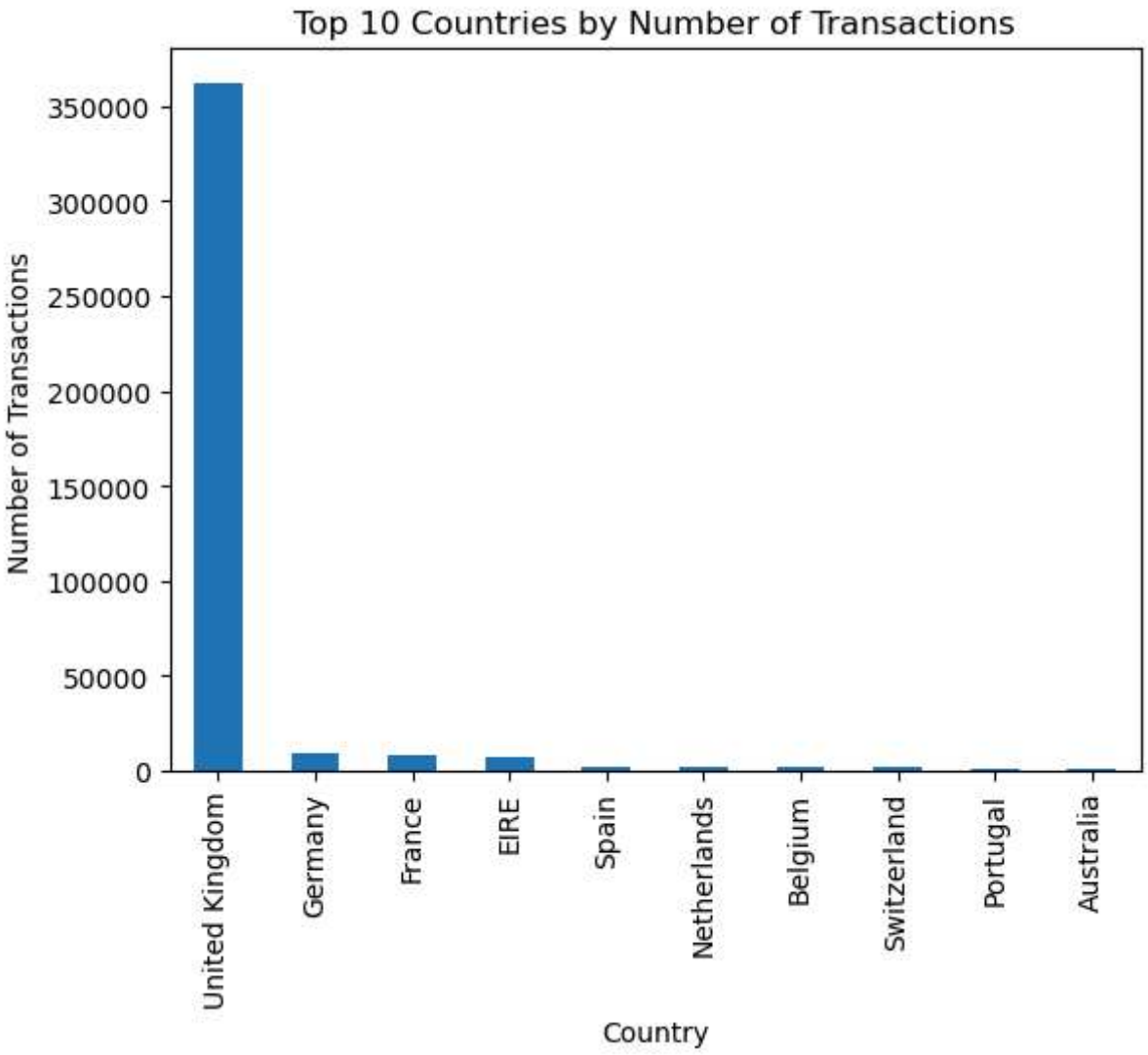

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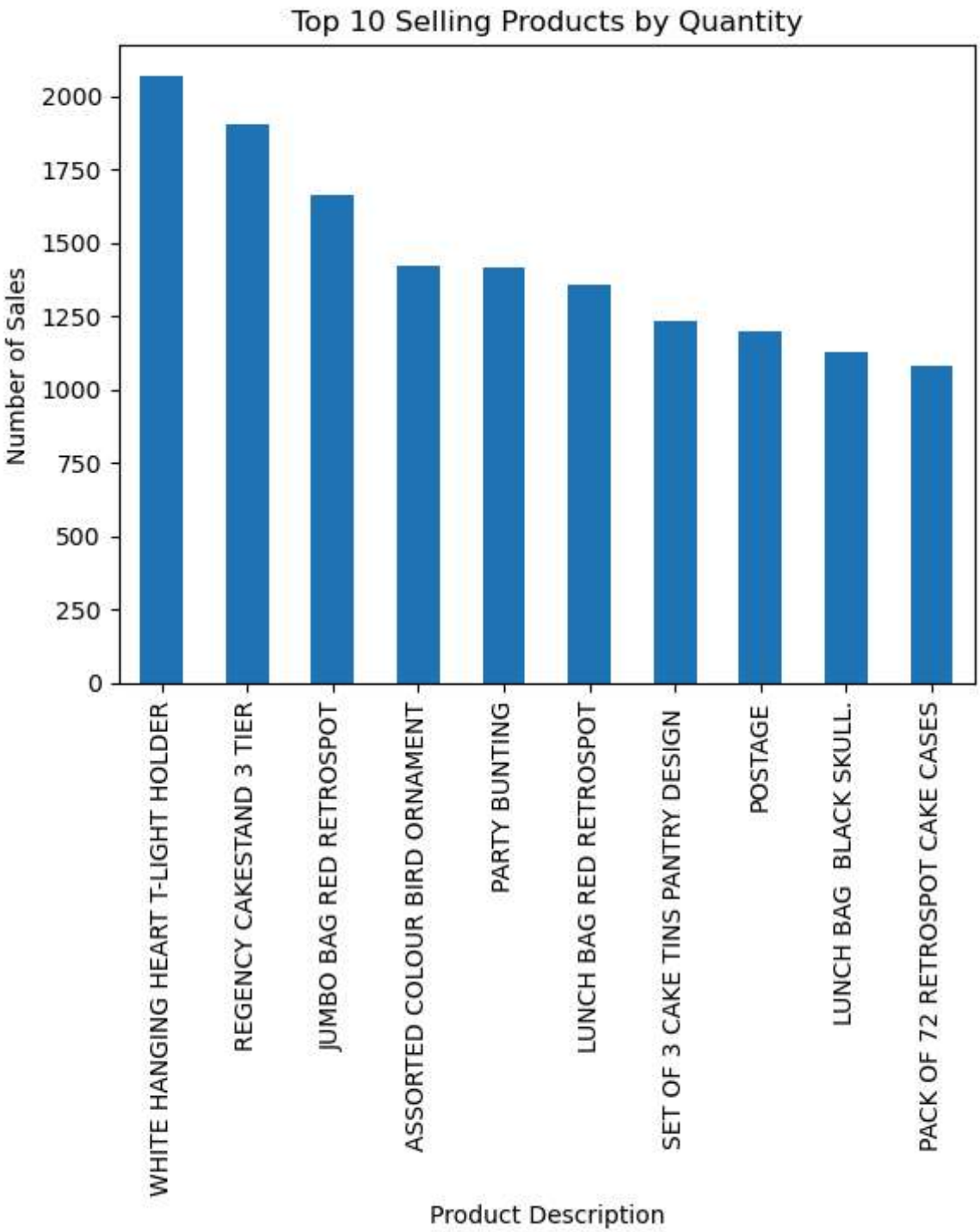

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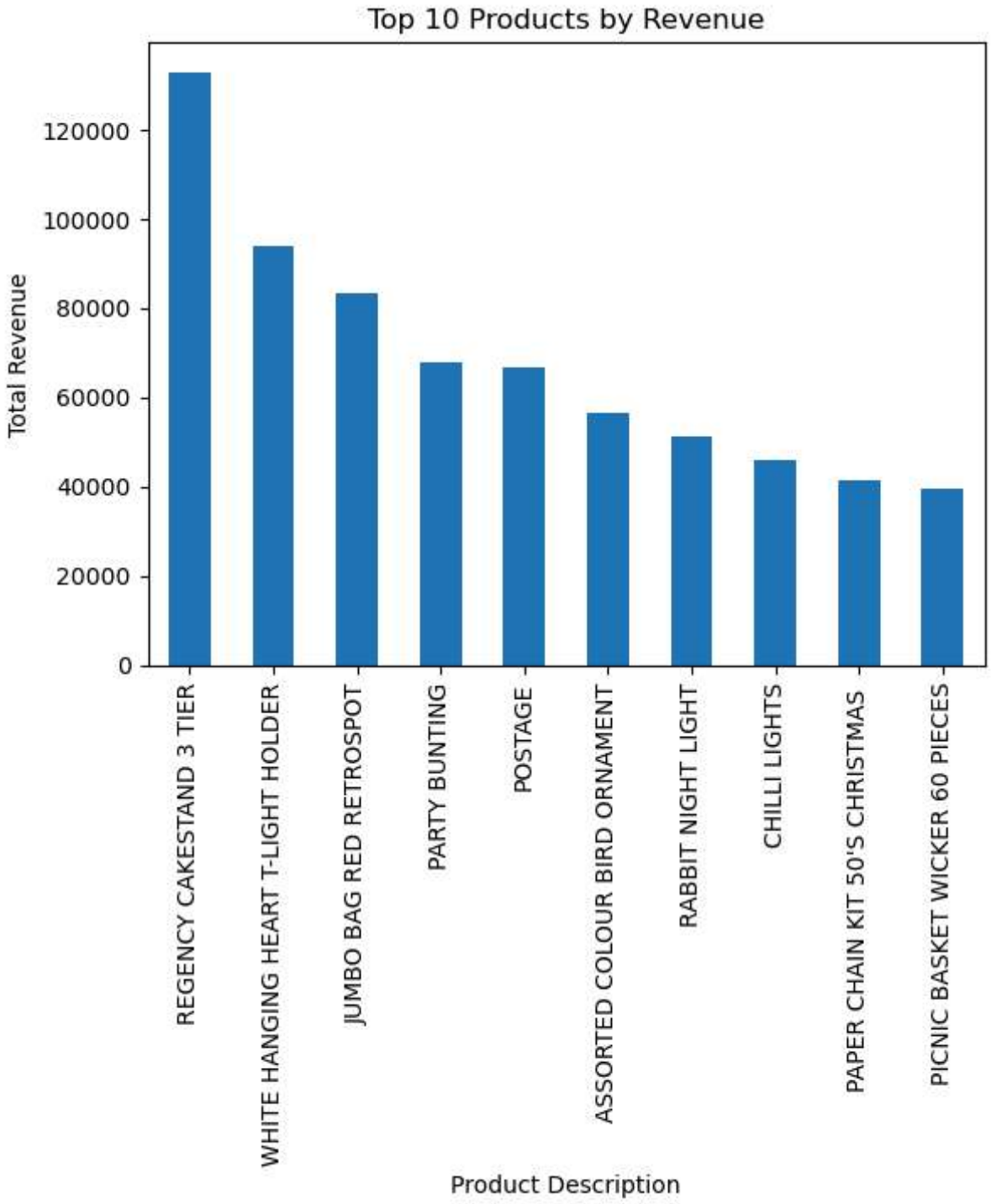
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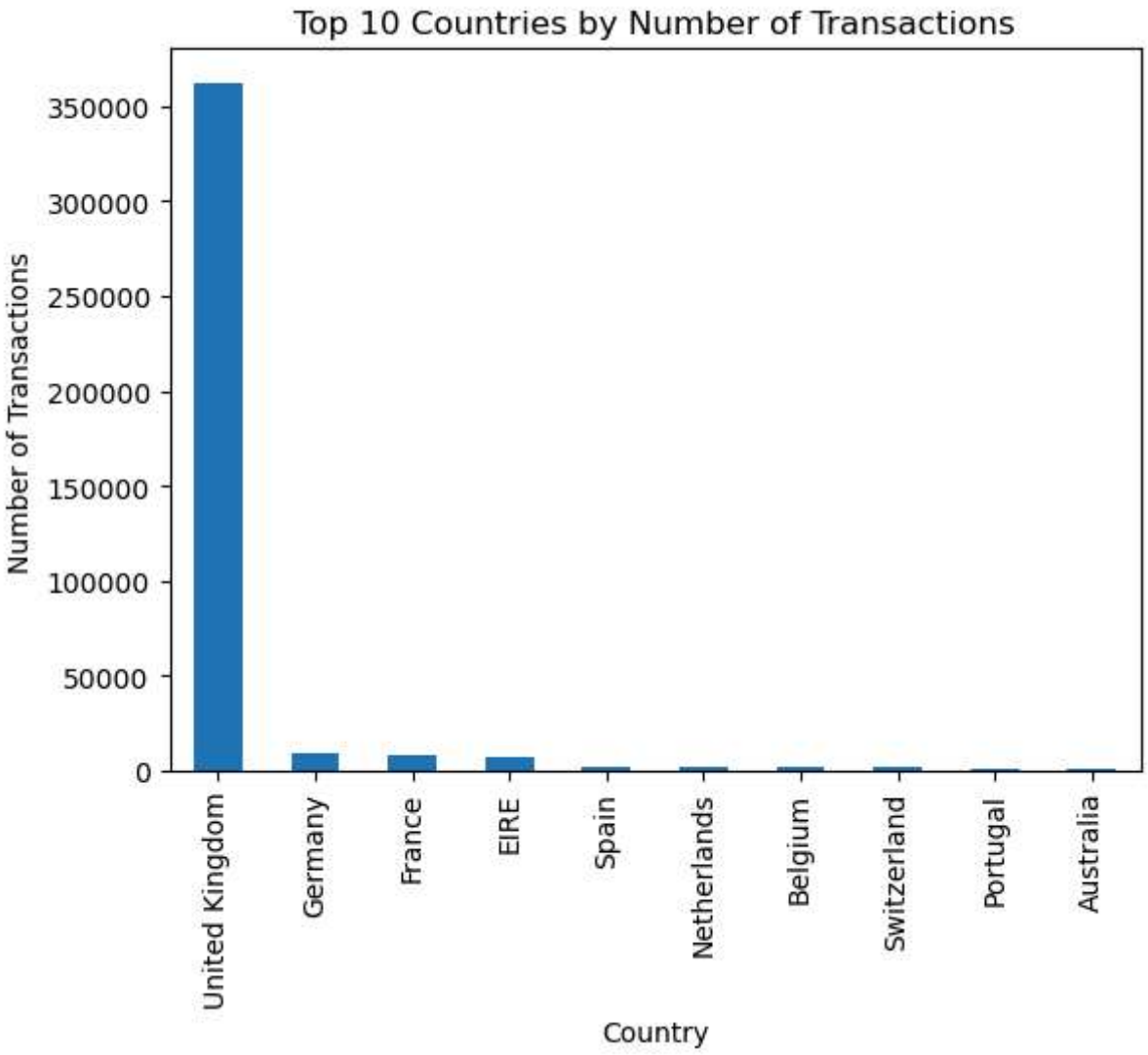

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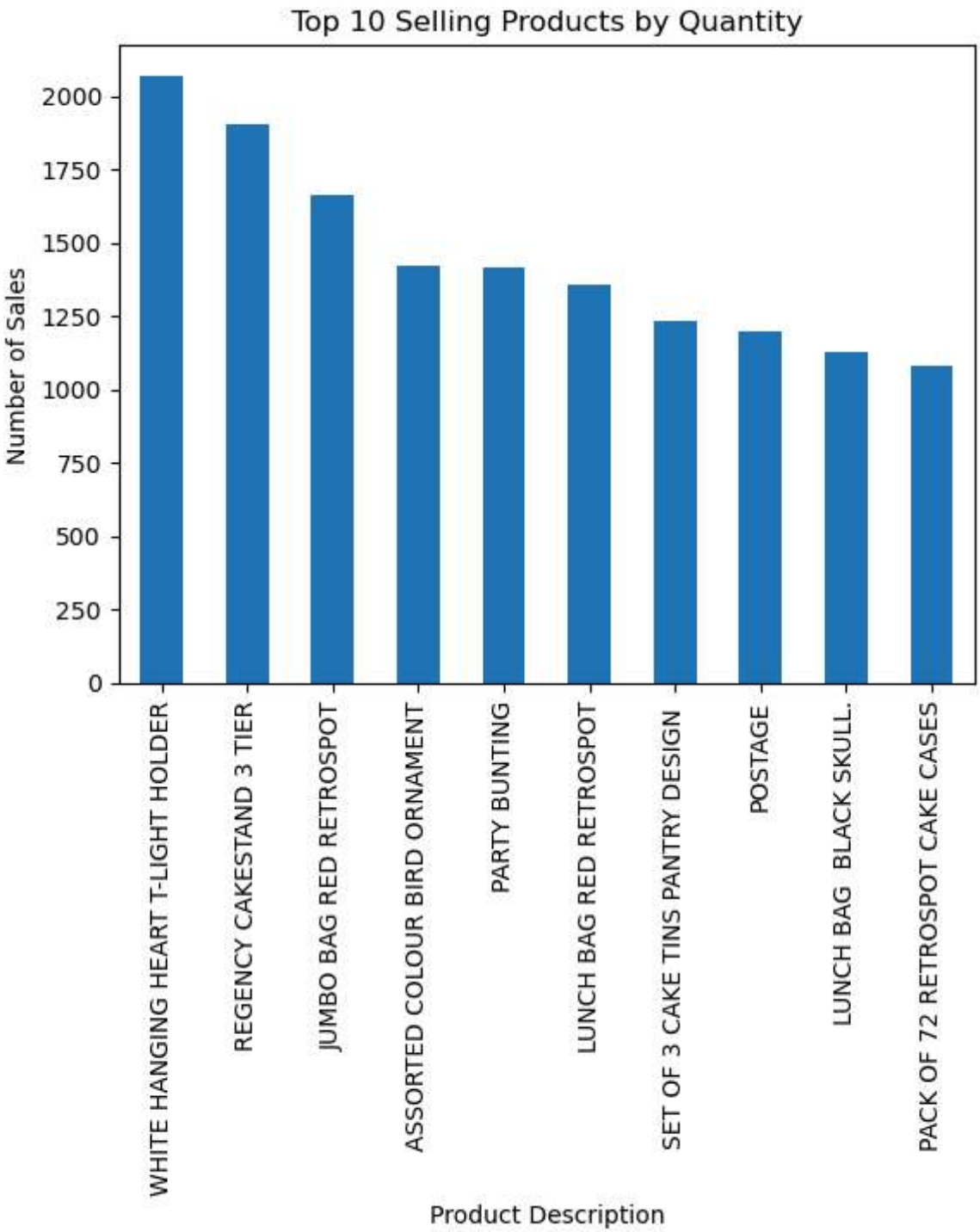

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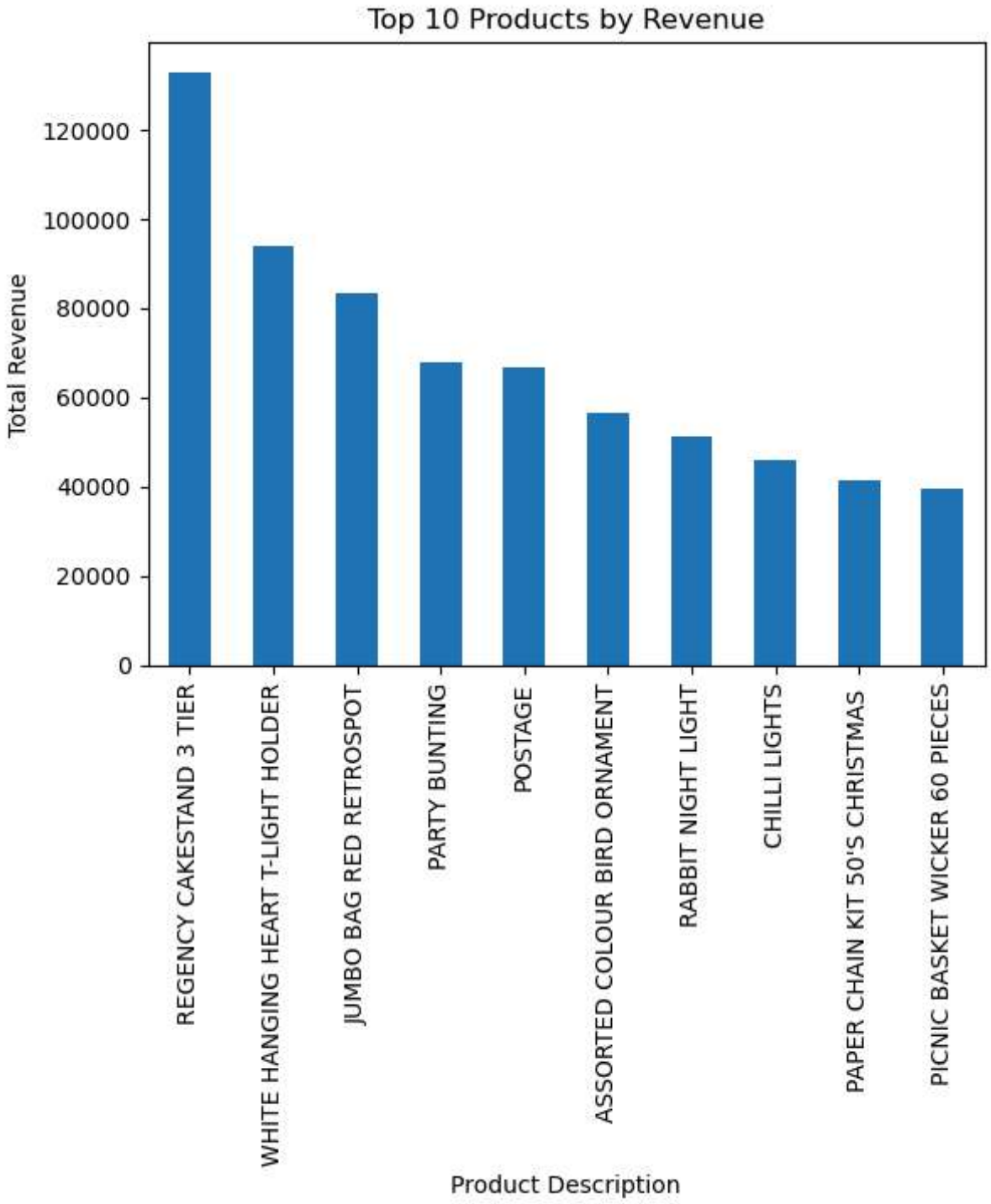
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