Final Project Report

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Contents

1 Introduction

This report presents an analysis of fictitious sales data from Domino's Pizza branches in Nigeria over a two-week period. The dataset includes daily sales figures, branch-level sales, and product sales targets. The goal of this analysis is to provide insights into sales performance using descriptive, diagnostic, and predictive analytics techniques.

2 Data Visualization

The dataset covers the sales period from December 3, 2015, to December 15, 2015, spanning two weeks.

2.1 Date-wise Sales

- Total actual sales over the two weeks: **₦47,370,000**
- Sales target for the two weeks: **₦48,410,900**
- Percentage of sales target achieved: **97.85%**

Figure 1: Total Sold Vs Target Sales

Daily Sales:

```
[422]: df = pd.read_excel('Sales-Data.xlsx')
       df1 = pd.read_excel('Daily-Sales-Target.xlsx')

[423]: df.groupby("Date")["Total Price"].sum()

[423]: Date
       2015-12-03    3762000
       2015-12-04    3588000
       2015-12-05    3812000
       2015-12-06    3872000
       2015-12-07    3755000
       2015-12-08    3558000
       2015-12-09    3457000
       2015-12-10    3502000
       2015-12-11    3669000
       2015-12-12    3862000
       2015-12-13    3591000
       2015-12-14    3591000
       2015-12-15    3351000
       Name: Total Price, dtype: int64
```

Figure 2: Date-wise Sales

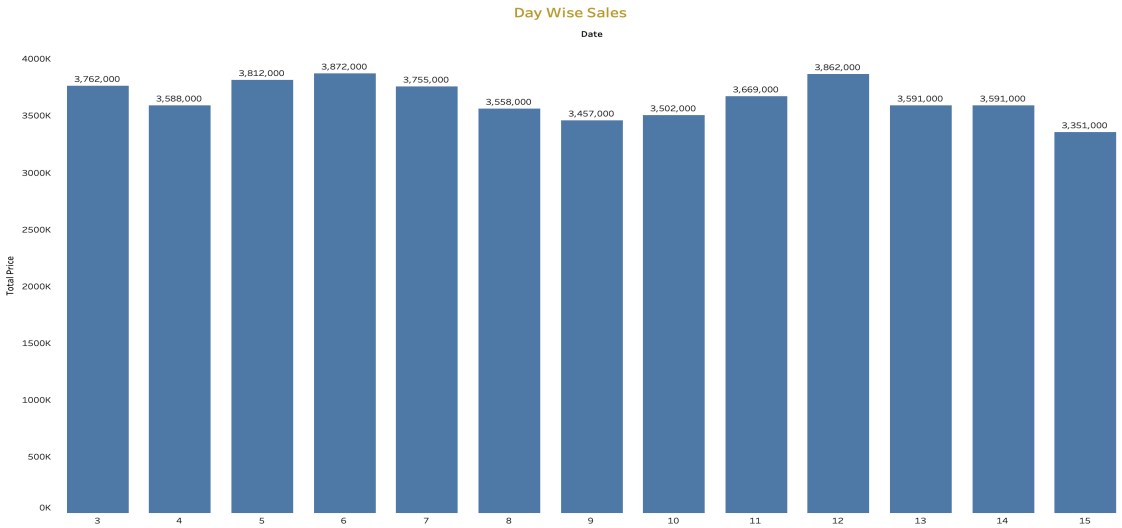

Figure 3: Date-wise Sales Data

2.2 Pizza Category-wise Sales

The dataset includes sales data for 16 types of pizzas. Below is a summary of actual sales, sales targets, and the percentage of target sales achieved for each category.

Pizza	**Actual Sales (₦)**	**Sales Target (₦)**	**Achieved (%)**
BBQ Chicken	3,600,000	4,320,000	83.33
BBQ Philly Steak	3,808,000	3,808,000	100.00
Beef Suya	2,943,000	2,943,000	100.00
Chicken Bali	1,778,000	1,600,200	111.11
Chicken Feast	1,744,000	1,395,200	124.99
Chicken Legend	1,766,000	1,766,000	100.00
Chicken Suya	3,824,000	3,441,600	111.11
Extravaganza	1,814,000	1,451,200	124.99
Hot Pepperoni Feast	4,292,000	4,292,000	100.00
Hot Veggie	3,800,000	3,040,000	124.99
Italiano	2,955,000	3,250,500	90.89
Margarita	3,484,000	3,832,400	90.96
Meatzaa	1,676,000	1,508,400	111.11
Pepperoni Feast	3,628,000	3,265,200	111.11
Pepperoni Suya	3,231,000	2,907,900	111.11
Veggie Supreme	3,027,000	2,421,600	124.99

Table 1: Pizza Category-wise Sales Performance

From the analysis, **Chicken Feast** had the highest percentage of target sales achieved at 124.99%, while **BBQ Chicken** had the lowest at 80.33%. The highest-selling category was **Hot Pepperoni Feast** with ₦4,292,000, while the lowest-selling category was **Meatzaa** with ₦1,676,000. Proper marketing strategies can help improve sales for lower-performing categories.

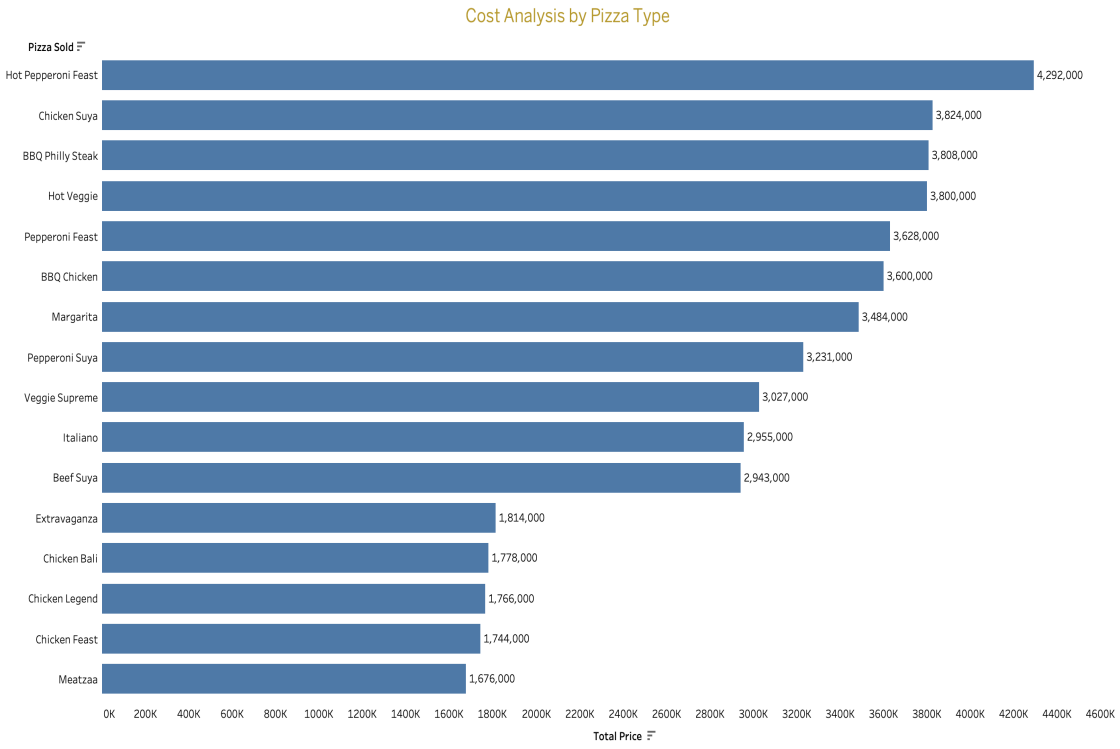

Figure 4: Pizza Category-wise Sales

2.3 Pizza Category-wise Quantity Sold

A total of **15,050** pizzas were sold across all categories. Below is the breakdown of quantities sold for each pizza type.

```
[208]: df = pd.read_excel('Sales-Data.xlsx')
       df1 = pd.read_excel('Sales-Target.xlsx')

[209]: df.groupby("Pizza Sold")["Quantity"].sum().sort_values(ascending=False)
```

```
[209]: Pizza Sold
       Pepperoni Suya          1077
       Hot Pepperoni Feast     1073
       Veggie Supreme          1009
       Italiano                 985
       Beef Suya                981
       Chicken Suya             956
       BBQ Philly Steak         952
       Hot Veggie               950
       Extravaganza             907
       Pepperoni Feast          907
       BBQ Chicken              900
       Chicken Bali             889
       Chicken Legend           883
       Chicken Feast            872
       Margarita                871
       Meatzaa                  838
       Name: Quantity, dtype: int64
```

Figure 5: Quantity Sold by Pizza Category

The **Pepperoni Suya** had the highest sales, while **Meatzaa** had the lowest. Understanding these trends helps in optimizing stock and marketing strategies.

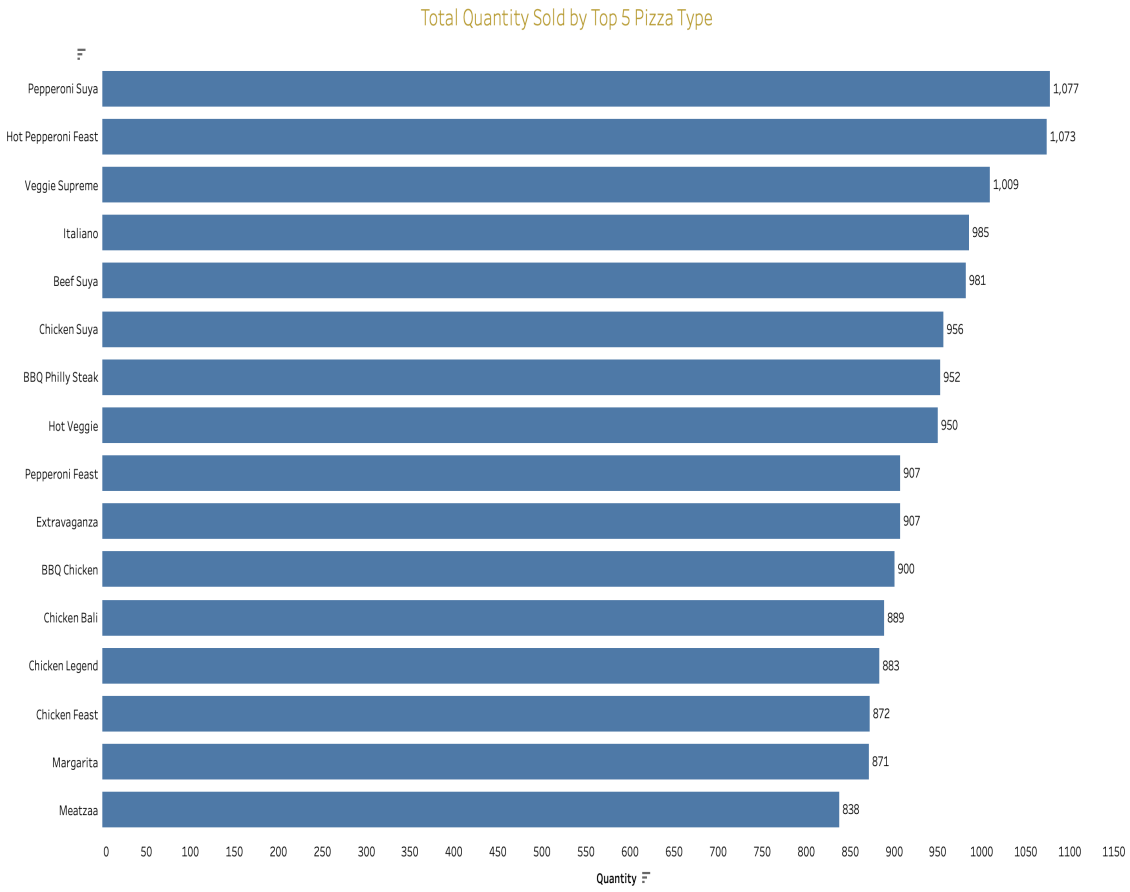

Figure 6: Quantity Sold by Pizza Category

2.4 Branch-wise Pizza Sales

The total sales were distributed across **five branches**. The breakdown of sales by branch is as follows:

```
[434]: df = pd.read_excel('Sales-Data.xlsx')
       df1 = pd.read_excel('Daily-Sales-Target.xlsx')

[435]: df.groupby("Branch")["Total Price"].sum()

[435]: Branch
       Gbagada     9780000
       Ibadan      9451000
       Ikoyi       9835000
       Lekki       9333000
       Surulere    8971000
       Name: Total Price, dtype: int64
```

Figure 7: Branch-wise Pizza Sales

The **Ikoyi** branch had the highest sales, while **Surulere** recorded the lowest.

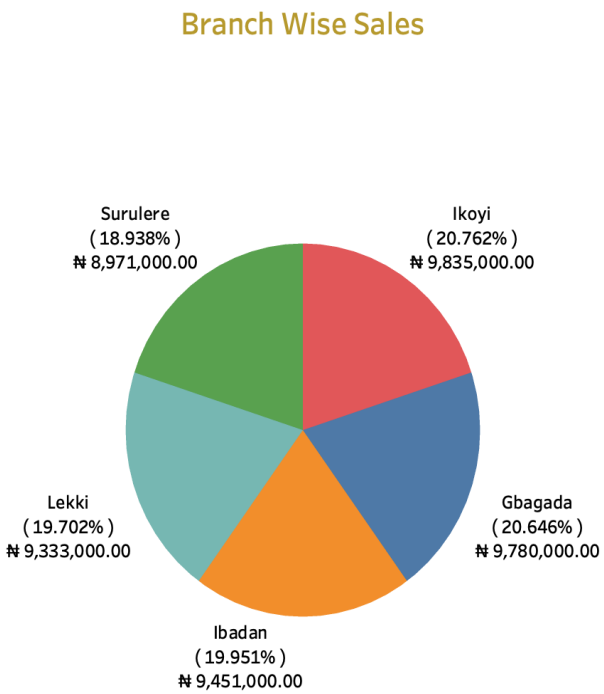

Figure 8: Branch-wise Pizza Sales

2.5 Time Range-wise Pizza Sales

The average pizza sales were analyzed across different **15-minute time intervals** to identify peak sales periods. The following time ranges were considered:

1. 8:00 - 8:15
2. 8:16 - 8:30
3. 8:31 - 8:45
4. 8:46 - 8:59
5. 9:00 - 9:15
6. 9:16 - 9:30
7. 9:31 - 9:45
8. 9:46 - 9:59

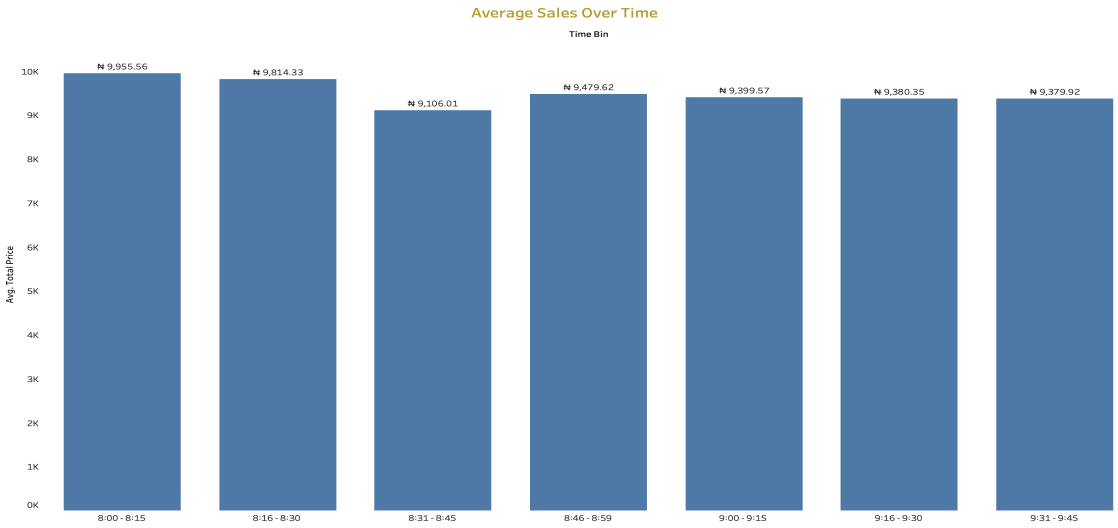

Figure 9: Average Pizza Sales Over Time

To simplify the analysis, the sales were categorized into two broader time ranges:

- **Before 9:00 AM**
- **After 9:00 AM**

The sales distribution across these two time periods is visualized below:

```
[452]: df = pd.read_excel('Sales-Data.xlsx')
       df1 = pd.read_excel('Daily-Sales-Target.xlsx')

[453]: df.groupby("Time Range")["Total Price"].sum()

[453]: Time Range
       After 9:00am     23668000
       Before 9:00am    23702000
       Name: Total Price, dtype: int64
```

Figure 10: Pizza Sales Before and After 9:00 AM

Additionally, a **pie chart** representation of sales in these time ranges provides a clearer understanding of their proportions:

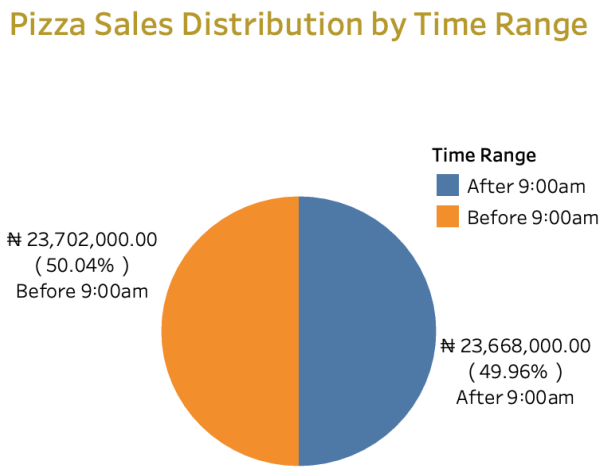

Figure 11: Time Range-wise Pizza Sales (Pie Chart)

This analysis helps in identifying peak business hours and optimizing staff and inventory accordingly.

3 Statistical Analysis

Statistical analysis provides insights into overall sales performance and transaction patterns. The key metrics are summarized below:

- **Total Transactions:** 5,000
- **Average Sales per Transaction:** ₦9,474
- **Standard Deviation:** ₦5,305.56
- **Median Sales Value:** ₦8,000
- **Minimum Sales per Transaction:** ₦2,000
- **Maximum Sales per Transaction:** ₦20,000

These statistics highlight the distribution and variability of sales transactions. The standard deviation suggests moderate fluctuation, while the median sales value indicates that half of the transactions are below ₦8,000.

```
[474]: df = pd.read_excel('Sales-Data.xlsx')
```

```
[480]: df.describe()
```

[480]:

	S/N	Date	Longitude	Lattitude	Price	Quantity	Total Price
count	5000.000000	5000	5000.000000	5000.000000	5000.000000	5000.000000	5000.000000
mean	2500.500000	2015-12-08 22:21:30.240000	3.636198	6.681106	3136.400000	3.010000	9474.000000
min	1.000000	2015-12-03 00:00:00	3.350000	6.450000	2000.000000	1.000000	2000.000000
25%	1250.750000	2015-12-06 00:00:00	3.384247	6.500000	2000.000000	2.000000	4000.000000
50%	2500.500000	2015-12-09 00:00:00	3.433300	6.500000	3000.000000	3.000000	8000.000000
75%	3750.250000	2015-12-12 00:00:00	3.916700	6.561638	4000.000000	4.000000	12000.000000
max	5000.000000	2015-12-15 00:00:00	4.116700	7.396400	4000.000000	5.000000	20000.000000
std	1443.520003	NaN	0.312604	0.359060	846.367714	1.412763	5305.558763

Figure 12: Overall Statistical Analysis

4 Tableau Dashboard

The Tableau Sales Dashboard provides a clear view of sales performance. It helps track revenue, sales targets, and key trends.

- **Total Sales:** Shows actual sales, target sales, and achievement percentage.
- **Branch Performance:** Compares sales across different branches.
- **Daily Sales Trend:** Displays sales changes over time.
- **Pizza Sales Analysis:** Highlights the best-selling pizzas.
- **Time-based Sales:** Shows sales patterns at different times of the day.

This dashboard helps in making quick and informed decisions.

Figure 13: Sales Dashboard

5 Conclusion

This analysis provides valuable insights into sales performance. Visualization helps identify trends, top-selling pizzas, and branch performance. Time-based analysis shows peak sales hours, aiding strategic decisions. Overall, data-driven insights support better planning and business growth.