BUSINESS DATA MANAGEMENT – CAPSTONE PROJECT

Optimizing Business Operations and Growth Strategies for

BALAJI COMPUTER SHOP

PRESENTATION BY

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ABOUT THE PROJECT

🎯 A B2C shop namely 'Balaji Computer' was chosen for the data analysis purpose. 12-week data was collected, processed and analyzed.

✅📊 This shop was founded in 2015 as an Emitra service center, offering a variety of online form-filling services.

👍 The shop offers digital and documentation services, including printouts, Xerox, online form filling, Aadhar card printing, PAN card creation, and driving license etc.

⭐ Objective of the project was to identify the business problems and find a way out to solve those problems to help the shop owner run the business in a better way.

PROBLEM STATMENT

1

OPERATIONAL CHALLENGES

- High fixed monthly costs, especially shop rent
- Low profit margins despite consistent service demand
- Seasonal fluctuation in customer traffic and service utilization
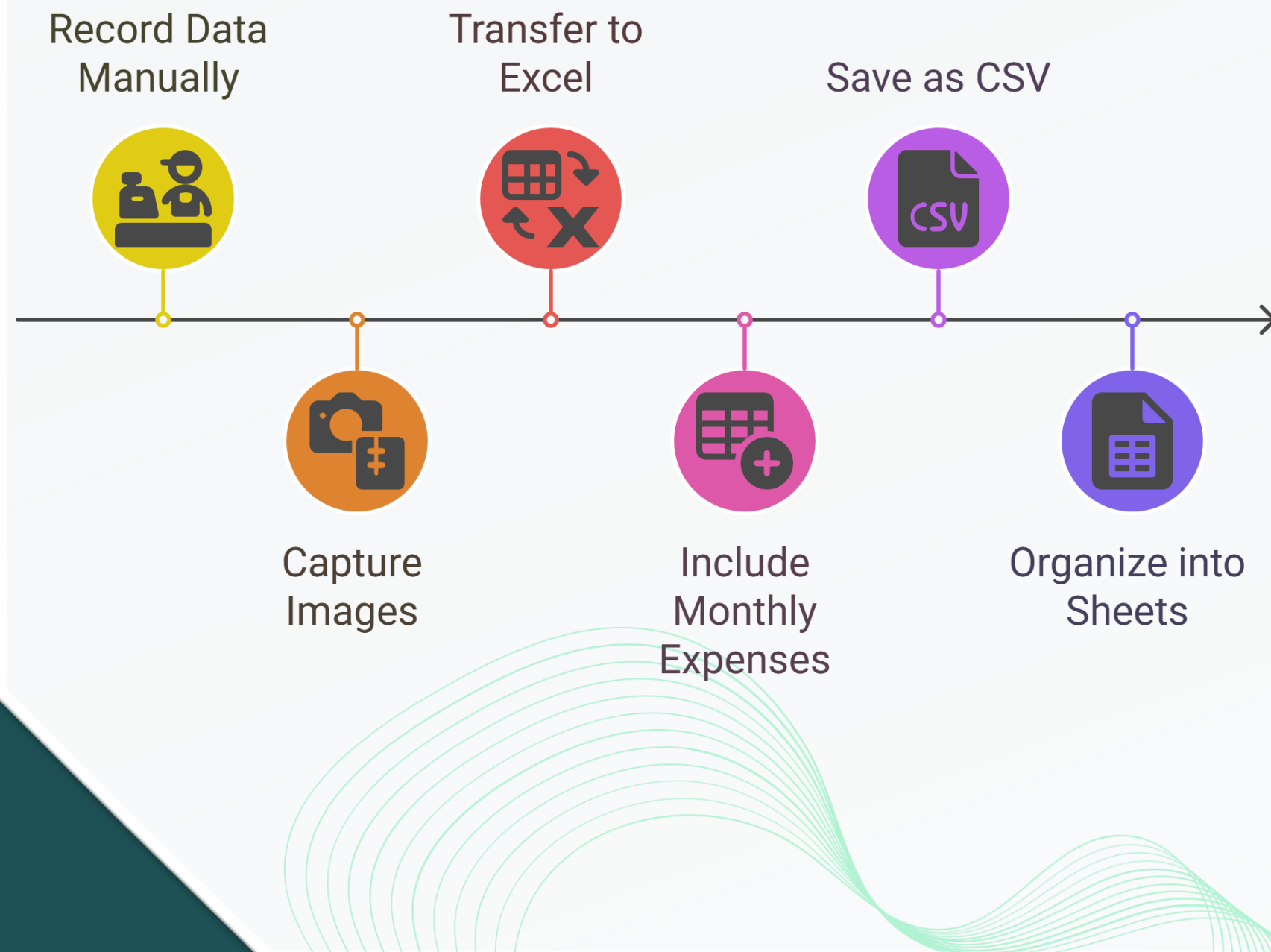
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Marketing Limitations

- Minimal digital marketing or customer engagement strategies
- Limited visibility of services beyond local foot traffic
- Lack use of Latest Technology for growth
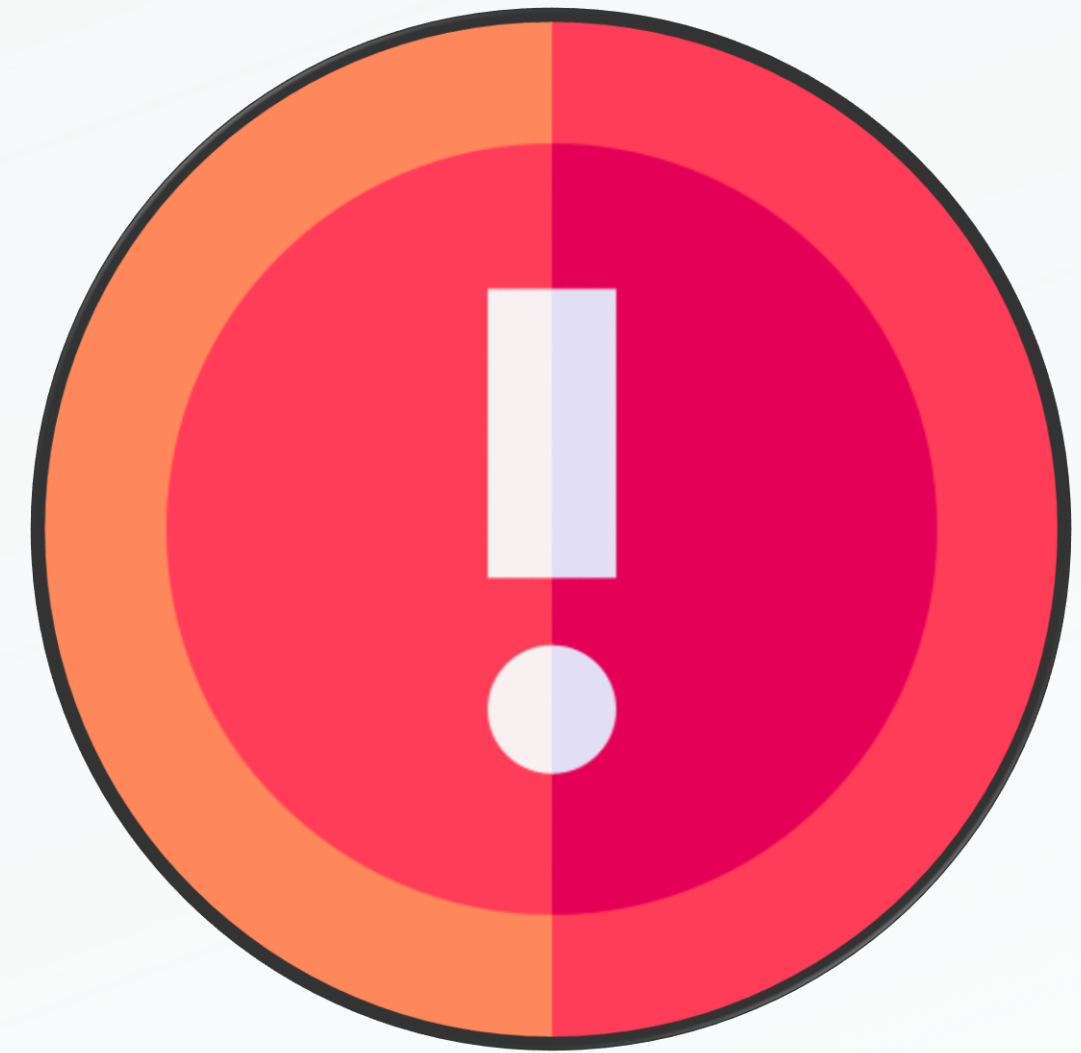
DATA COLLECTION PROCESS AND PROBLEM SOLVING APPROACH

➢ Time Period of Data Collected : 12-weeks (November 2024 to January 2025)

Record Data Manually

Transfer to Excel

Save as CSV

Capture Images

Include Monthly Expenses

Organize into Sheets

- **Analytical Framework:**
  - Measured service performance by quantity and revenue
  - Analyzed peak hours and customer behavior patterns
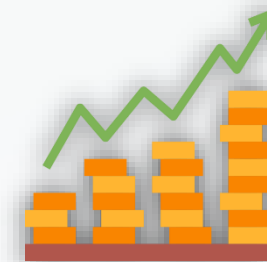
- **Revenue & Expense Mapping:**
  - Calculated actual revenue and deducted monthly expenses to find net profit
  - Identified high-cost factors (like shop rent) affecting profitability

- **Insights to Actionable Strategies:**
  - Recognized top-performing services (Online Forms, Color Print)
  - Detected low-demand periods (e.g., December).
  - Suggested improvements in staffing, marketing, and service bundling

DATA OVERVIEW AND DESCRIPTION

- Dataset Structure
  - Each entry includes the following attributes:
  - Date – Day of service
  - Day – Day of the week (e.g., Monday, Tuesday)
  - Opening Time – Time
  - Type of Service – e.g., Xerox, Online Form, Color Print
  - Quantity – Number of service units
  - MRP & Cost – Pricing details for each service
  - Revenue – Earnings from each transaction
  - Week Number – Used for week-wise trend analysis
- Dataset Purpose :
  - Analyze service demand, revenue patterns, and seasonal trends
  - Identify peak hours/days, low-performing services, and profitability gaps

Summary of Types of Services:

	Types_of_services	Total_Quantity	Total_Sale_Amount	Quantity_Percentage	Sale_Amount_Percentage
0	Color Print	227.0	18160.0	5.334900	18.586371
1	Driving Licence	96.0	7680.0	2.256169	7.860316
2	Lamination	148.0	2960.0	3.478261	3.029497
3	Online form	655.0	52400.0	15.393655	53.630279
4	Pan Card	123.0	6150.0	2.890717	6.294393
5	Print	543.0	5430.0	12.761457	5.557489
6	Xerox	2463.0	4926.0	57.884841	5.041656

Summary of Types of Services

```
Data columns (total 8 columns):
 #   Column                   Non-Null Count   Dtype
---  ------                   --------------   -----
 0   Date                     143 non-null     object
 1   Day                      143 non-null     object
 2   Opening_time_(AM)_(App.) 138 non-null     object
 3   Types_of_services        138 non-null     object
 4   MRP_Rupees               138 non-null     float64
 5   Quantity                 138 non-null     float64
 6   Total_sale_amount        138 non-null     float64
 7   Week                     143 non-null     object
dtypes: float64(3), object(5)
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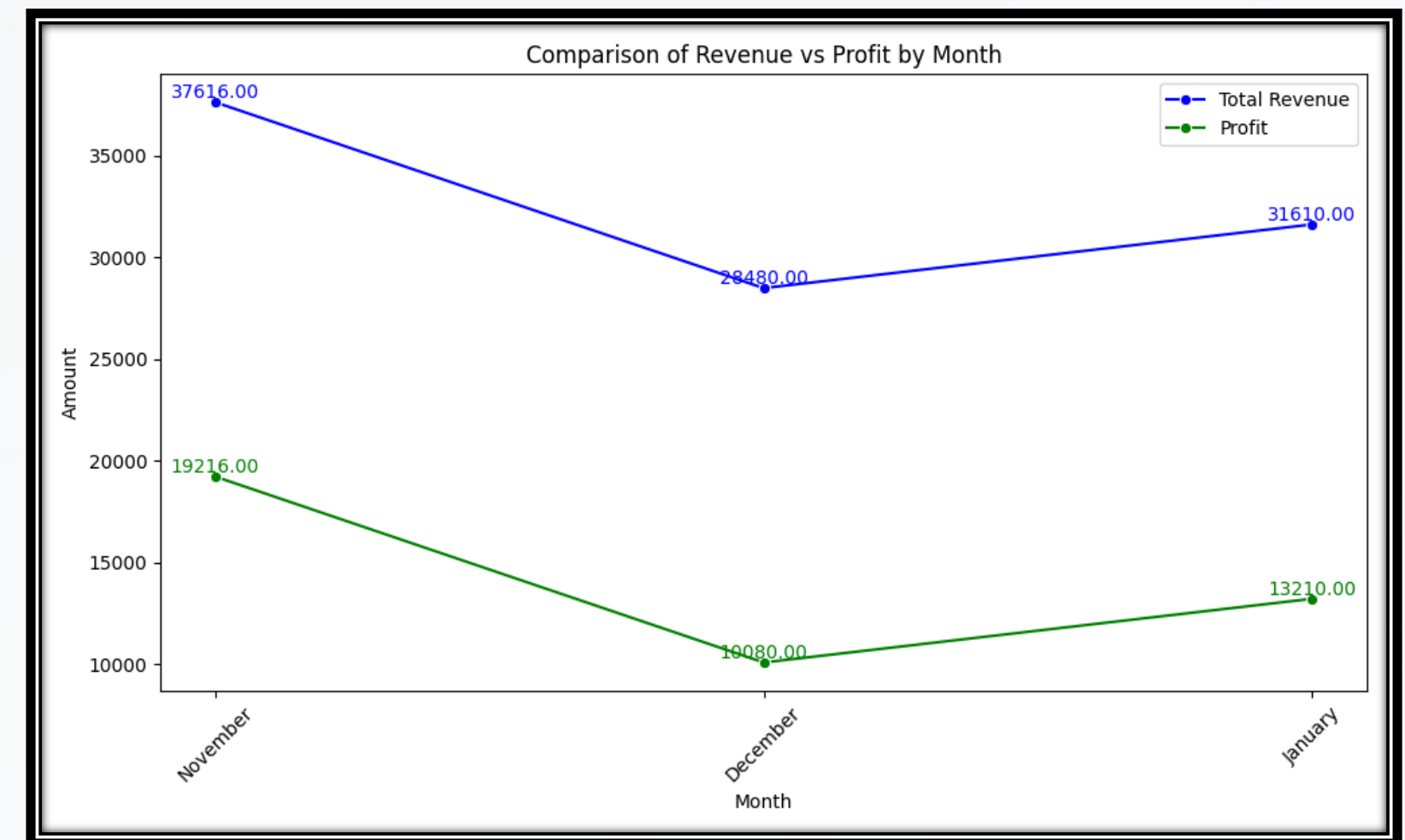
Summary of Data

```
Monthly Profit (after subtracting expenses):
     Month  Total_sale_amount    Profit
2  November            37616.0   19216.0
0  December            28480.0   10080.0
1   January            31610.0   13210.0
```

Summary of Monthly Sales

MONTHLY REVENUE ANALYSIS

- Fixed monthly expense: ₹18,400 (includes high shop rent, utilities, etc.)

- Revenue Trends:
  - November: Highest total revenue
  - December: Significant drop due to off-season
  - January: Moderate recovery

- Net Profit = Total Revenue – Monthly Expenses:
  - In some months, profit margin was very low (₹10,000–₹12,000)
  - In December, net profit was nearly negligible

- High fixed costs significantly reduce profitability

- Even in high-revenue months, margins remain tight

- Seasonal variation in service demand affects overall income

Comparison of Revenue vs Profit by Month
— Total Revenue
— Profit

37616.00
28480.00
31610.00
19216.00
10080.00
13210.00

Amount

November   December   January
Month

AMOUNT AND QUANTITY ANALYSIS

- Quantity-Based Analysis:
  - Xerox is the most used service across all months due to its low cost and high necessity.
  - Online Form services follow closely, especially during academic and government admission periods.
  - Services like Lamination, PAN Card, and Driving License have lower usage.

Three Month Service Distribution
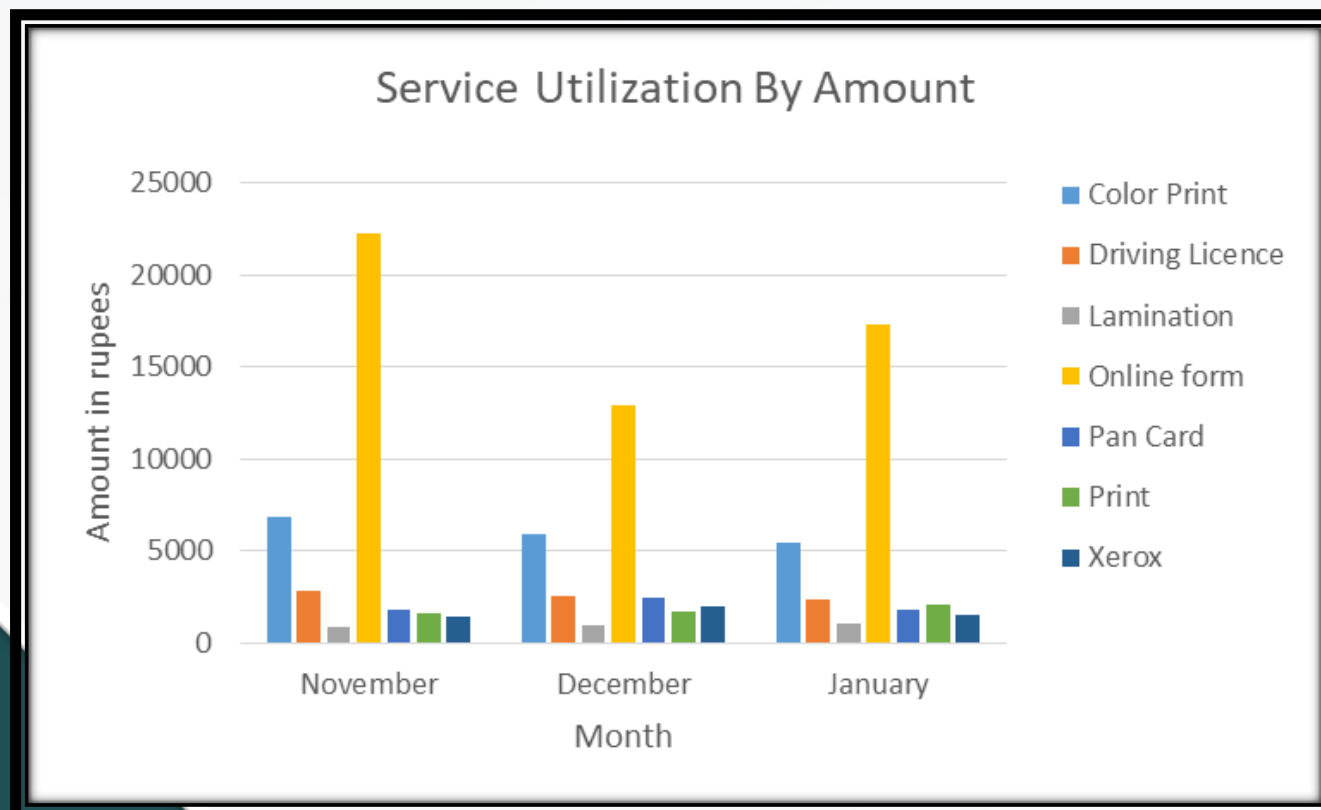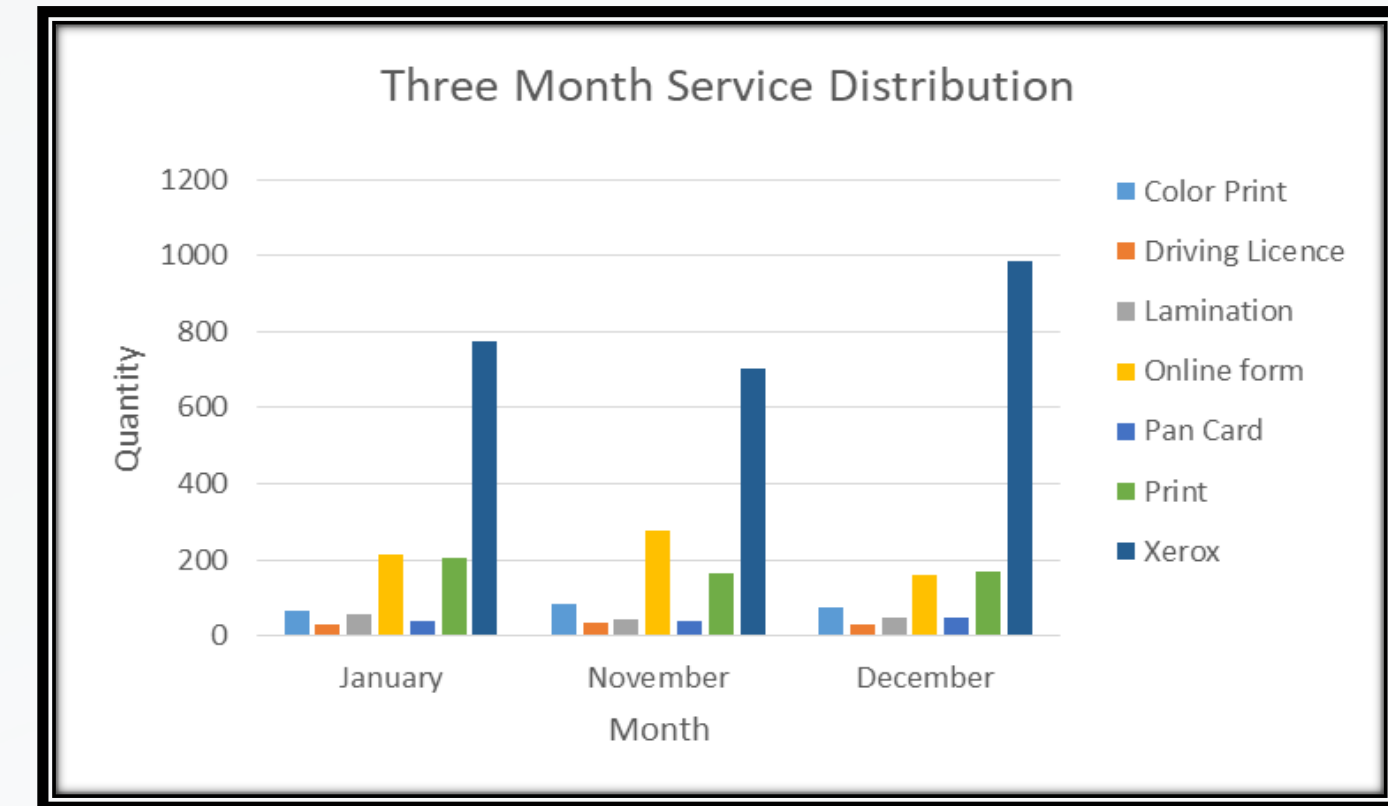
- Amount-Based Analysis:
  - Online Form services contribute the highest revenue, despite moderate usage.
  - Color Print brings in substantial income with relatively low quantity.
  - Xerox, while heavily used, has minimal revenue impact due to its low pricing.

Service Utilization By Amount

OPENING TIME ANALYSIS

- Peak Hours (9:30 AM – 10:50 AM)
  - This time window sees the highest customer activity.
  - Xerox and Print services dominate in quantity.
  - Online Form submissions also peak around 10:00 AM to 10:40 AM.

- Revenue Patterns :
  - Online Form services generate the most revenue during peak hours.
  - Color Print contributes steadily with smaller revenue spikes.
  - Services like Lamination, PAN Card, and Xerox bring in lower revenue despite high volume (in case of Xerox).
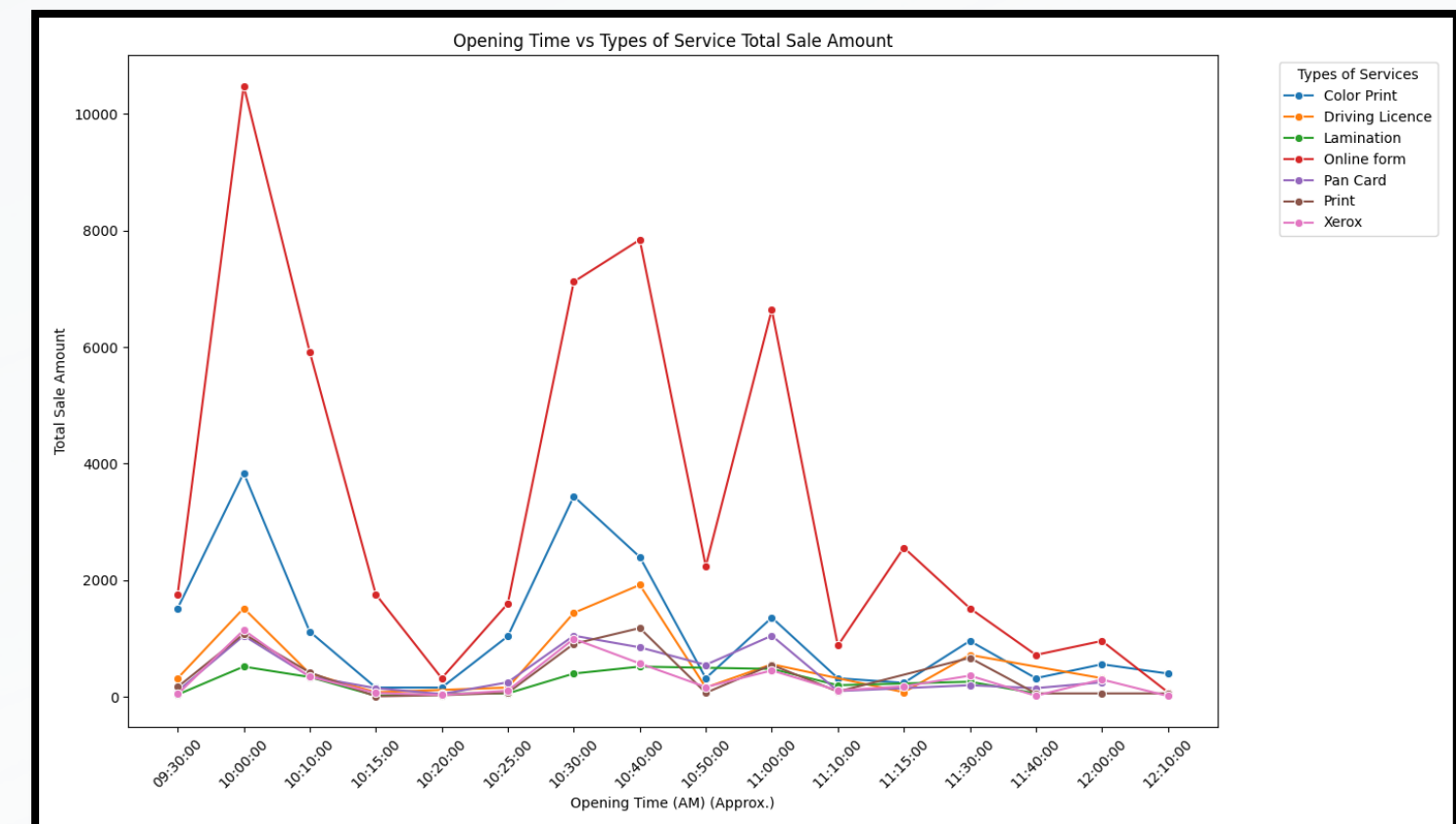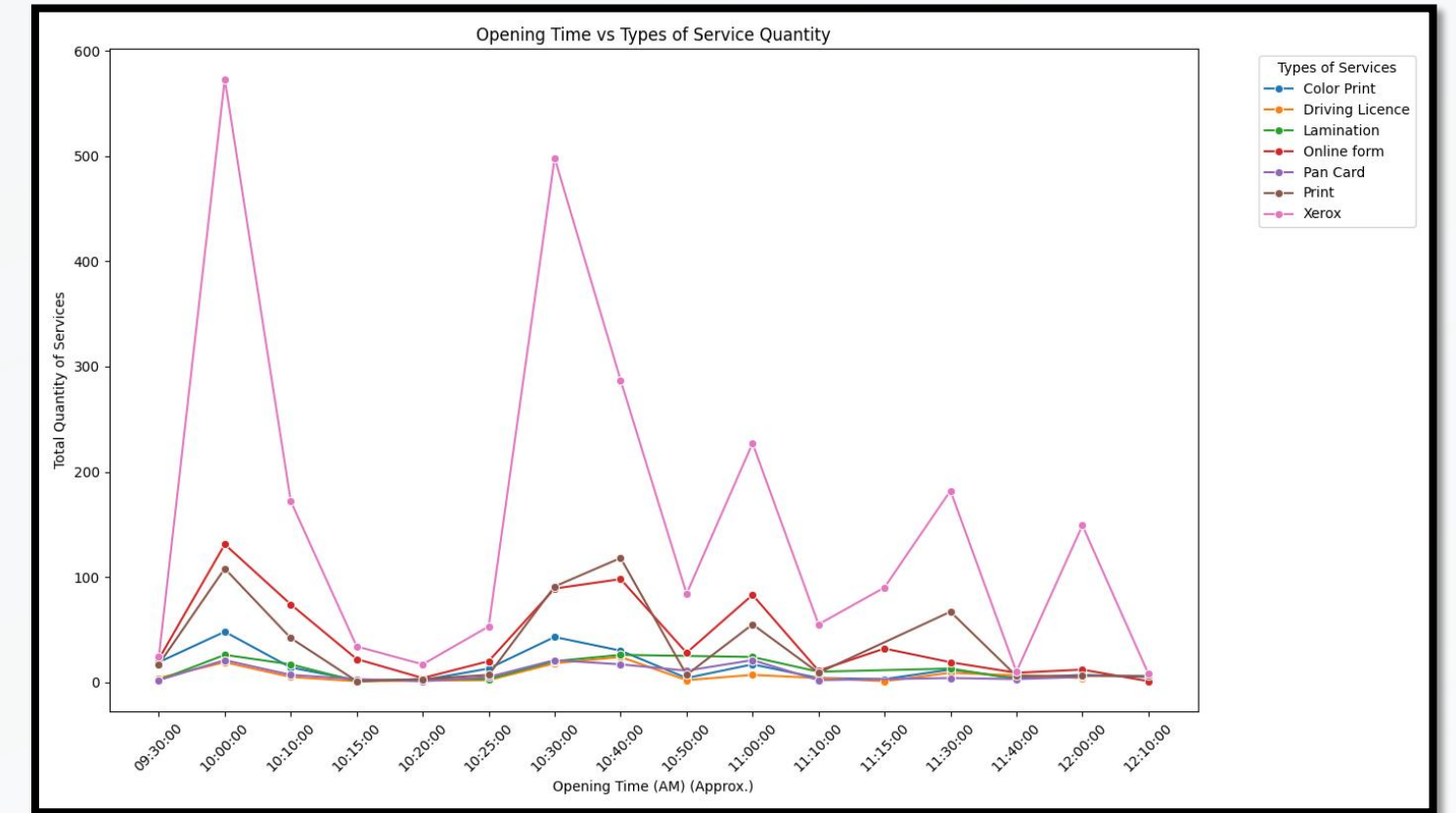
DAYWISE ANALYSIS AND TOP 3 SERVICE ANALYSIS

- Revenue Trends :
  - Monday generates the highest revenue, especially from Online Form and Color Print services.
  - Xerox, despite high usage, contributes minimally to revenue across all days.
  - Driving License and Lamination services contribute steadily but remain lower in both quantity and revenue.

Heatmap of Types of Service and Day (Based on Total Sale Amount)
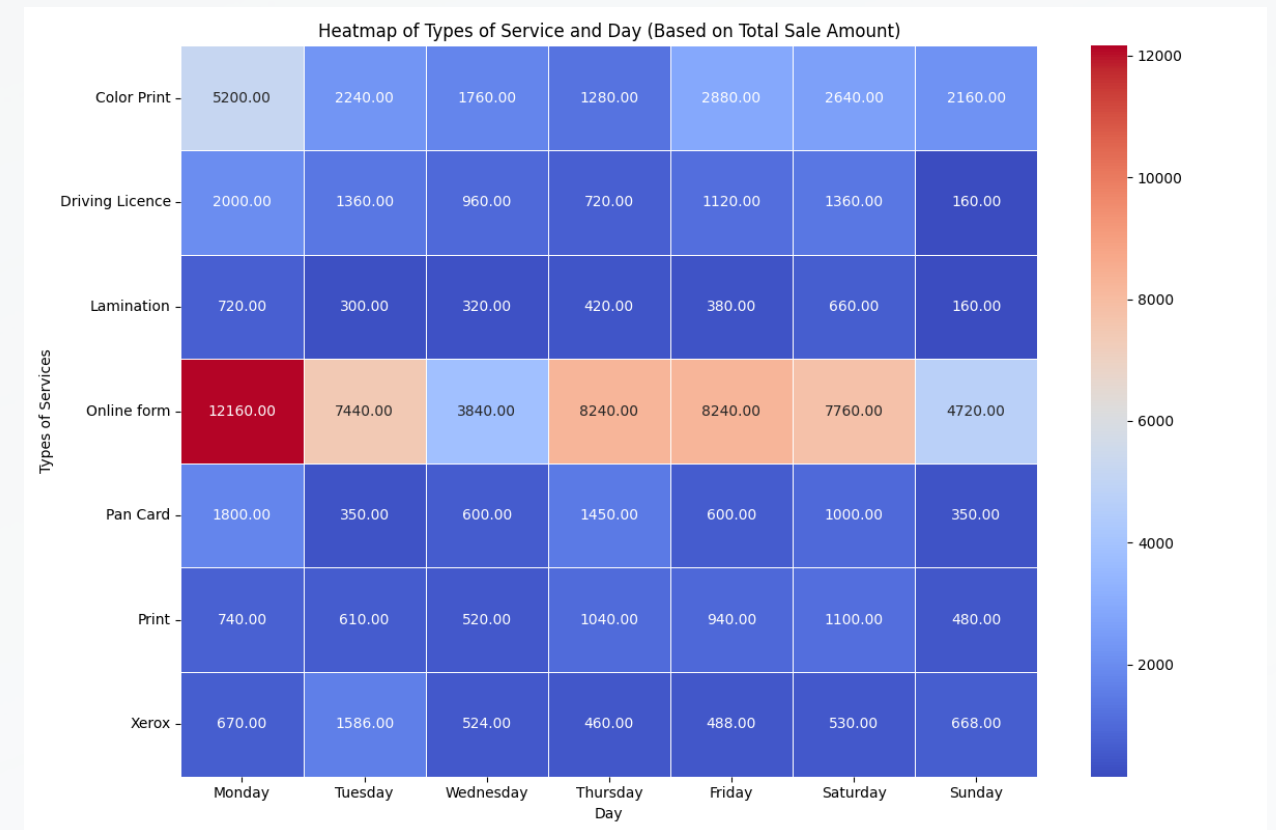
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Top 3 Services by Average Quantity:
  Types_of_services    Avg_Quantity    Avg_Amount
6              Xerox      32.840000     65.680000
3        Online form       8.733333    698.666667
5              Print       7.647887     76.478873

Top 3 Services by Average Amount:
  Types_of_services    Avg_Quantity    Avg_Amount
3        Online form       8.733333    698.666667
0        Color Print       3.783333    302.666667
1     Driving Licence      2.232558    178.604651
```

- Top 3 Services :
  - Xerox is the most frequently used service but contributes the least to average revenue.
  - Online Form services top both in average quantity and revenue.
  - Color Print and Driving Licence services, despite low quantity, generate high revenue per transaction.

RECOMMENDATIONS

OPERATIONAL IMPROVEMENTS
➢ Reallocate staff during peak hours (9:30 AM – 11:00 AM) to handle rush.
➢ Consider relocating to a place with lower rent to reduce fixed costs.
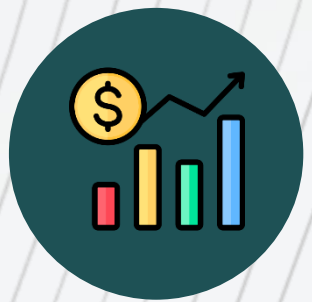
REVENUE OPTIMIZATION
➢ Focus on promoting high-value services like Online Forms and Color Print.
➢ Bundle low-demand services (e.g., Lamination + Xerox) to increase utilization.
➢ Provide seasonal offers or discounts during off-peak months like December.

MARKETING & CUSTOMER ENGAGEMENT
➢ Use WhatsApp groups and social media platforms to notify customers about form openings and offers.
➢ Run targeted ads during high-demand months (Nov, Jan) and slow periods (Dec).
➢ Introduce loyalty programs or referral rewards to retain regular customers.

DATA & TECHNOLOGY
➢ Continue using Excel and Python for service-wise and revenue trend analysis.
➢ Explore automated reporting dashboards for real-time insights.

THANK YOU