

EDA Reports with Business Actions

1. Top Dates with Maximum Entries

Insight:

- Dates like **2021-12-01, 2023-12-01, and 2020-12-01** recorded the highest entries, indicating major sales activities or promotions.
- These dates likely coincide with major events such as holiday shopping (Black Friday, Cyber Monday, Christmas, and New Year promotions).

Business Action:

- Plan aggressive marketing campaigns and promotions around these dates.
- Ensure adequate inventory levels and staffing to handle increased traffic.

2. Sales Dates Coinciding with Holidays

Insight:

- High sales were observed on dates like **2021-11-25 (Thanksgiving), 2021-12-25 (Christmas), and 2022-12-31 (New Year's Eve)**.
- These holidays are key drivers of consumer spending.

Business Action:

- Launch holiday-specific campaigns with exclusive offers.
- Promote holiday bundles and limited-time deals to maximize sales.

3. Sales Distribution by Weekdays

Insight:

- Sales are spread unevenly across weekdays, with some days (e.g., Fridays and weekends) showing higher activity.
- Midweek days may experience a dip in sales.

Business Action:

- Introduce midweek discounts or promotional events to increase customer engagement on slower days.
- Extend operating hours or offer special weekend promotions to capture peak traffic.

4. Sales Distribution by Month

Insight:

- The majority of sales are concentrated in **November and December** due to the holiday shopping season.
- These months account for nearly 75% of the top-performing sales dates.

Business Action:

- Focus marketing budgets on the last quarter of the year.
- Optimize the supply chain to handle increased demand during these months.

5. Heatmaps of Sales by Branch and Product Category

Insight:

- Certain branches outperform others in specific product categories, showing strong alignment with regional preferences.
- Product categories like electronics, home goods, and seasonal items (e.g., holiday decorations) likely drive sales during the holidays.

Business Action:

- Expand inventory for high-demand product categories in top-performing branches.
- Use targeted advertising to promote specific categories in underperforming locations.

6. Sales Trendlines Over Time

Insight:

- Clear spikes in sales occur during **holiday seasons** and **end-of-quarter periods**.
- Consistent sales dips during the summer months indicate a potential slowdown in consumer activity.

Business Action:

- Plan major campaigns or flash sales during historically low-performing months to even out revenue.
- Diversify product offerings to include items with summer demand (e.g., travel, outdoor, or leisure products).

7. Box Plots for Profit Margins Across Branches

Insight:

- Profit margins vary significantly between branches, indicating differences in operational efficiency, pricing strategies, or regional demand.
- Some branches consistently achieve higher margins, showcasing best practices.

Business Action:

- Study high-performing branches and replicate successful strategies in underperforming locations.
- Optimize pricing and operational costs in low-margin branches.

8. Pie Charts of Payment Method Preferences**Insight:**

- **Ewallets** and **mobile payments** have growing adoption but remain underutilized compared to cash and card payments.
- Customers using digital payments tend to leave higher satisfaction ratings.

Business Action:

- Offer incentives for customers to use Ewallets or mobile payments, such as cashback or loyalty points.
- Promote the convenience and security of digital payments through in-store and online campaigns.

9. Hypothesis Testing: Ewallet vs. Cash Ratings**Insight:**

- Customers using Ewallets tend to provide higher ratings, possibly due to faster and more seamless checkout experiences.
- Cash payments may correlate with lower ratings, possibly due to longer processing times or inconvenience.

Business Action:

- Prioritize digital payment methods by enhancing point-of-sale systems.
- Train staff to efficiently manage cash payments to minimize delays.

10. Revenue and Customer Segmentation**Insight:**

- Top-performing branches are clustered in urban areas with higher population density and disposable income.
- Customers in these segments are more likely to use digital payments and spend on premium product categories.

Business Action:

- Focus on expanding operations in urban areas with high purchasing power.
- Offer exclusive premium product lines in high-performing branches.

11. Correlation Analysis: Rating vs. Profit Margin

Insight:

- Higher customer ratings tend to align with higher profit margins, emphasizing the importance of customer satisfaction in driving profitability.

Business Action:

- Invest in improving customer experiences through personalized services, quality products, and seamless checkout options.
- Monitor ratings closely and address negative feedback to maintain a positive customer experience.

12. Seasonal Sales Trends

Insight:

- Holiday and end-of-year seasons consistently show increased sales volumes across categories.
- Non-seasonal items like groceries and daily essentials maintain steady sales throughout the year.

Business Action:

- Balance promotional strategies to include both seasonal and evergreen products.
- Offer loyalty programs or subscriptions for daily essentials to ensure consistent revenue streams.