Report

Sales Analytics Dashboard: Regional and Departmental Performance Analysis

Project Description

This sales analytics project is designed to track, aggregate, and visualize critical performance indicators for a mid-sized sales organization using employee-level transactional data. The dashboard integrates diverse KPIs—such as total sales, profit, commissions, sales by region and department, and employee demographics—enabling stakeholders to make informed decisions and optimize resource allocation.

Key Features

• Total Sales, Profit, and Commission Metrics:

Central summary of overall sales, net profit, and commissions paid, helping leaders gauge short-term fiscal performance.

• Regional Sales Breakdown:

Aggregates sales volumes by geographic region (East, West, North, South) highlighting geographical strengths and weaknesses.

• Departmental Performance:

Details departmental contributions (Electronics, Automobile, Clothing, Home Decor, Groceries) to overall sales, with segment-specific targets and achievements.

• Employee Distribution:

Visualizes employee counts by department and age group, supporting workforce analysis and planning.

• Sales Target Tracking:

Captures both company-wide and department-level sales targets versus actuals, clearly displaying progress and achievement status.

Commission Analysis:

Quantifies commissions, both in aggregate and per employee, tying compensation to performance achievements.

Analytical Processes

- Identification of top-performing regions and departments for strategic expansion.
- Workforce age and department breakdowns to aid HR and leadership in recruitment and talent management.
- Assessment of sales target achievement at both individual and organizational levels.
- Correlation analysis between commission structures and departmental performance for optimization.

✓ Data Cleaning Steps

1. Deduplication:

Removed any duplicate entries in the employee, sales, or commission data to ensure unique representations. Used unique constraints on EmployeeID to prevent double counting.

2. Handling Missing Values:

Audited columns for nulls in critical fields (EmployeeID, Department, SalesAmount, Region, Target). Used simple imputation for harmless nulls, flagged and resolved data issues where essential values were missing.

3. Standardization of Categorical Columns:

Made categorical fields (Department names, Region, Age Group) case-insensitive, corrected spelling errors, and unified category formats for reliable grouping.

4. Validation of Numeric Fields:

Ensured numeric columns (SalesAmount, Target, TotalEarnings, TotalCommission) were free of text and non-numeric values, and handled outlier detection using z-score or IQR analysis.

5. Consistency Checks:

- TargetAchieved logic audited: flagged as "Yes" if and only if SalesAmount ≥ Target for each row.
- Commission calculations validated by cross-checking CommissionPercentage and SalesAmount to confirm TotalCommission accuracy.

Data Transformation Steps

1. Age Group Categorization:

Applied binning on Age column (e.g., 18–25, 25–35, 35–45, 45–55), making demographic analysis and visualization possible.

2. Aggregation by Region and Department:

- Summed SalesAmount by Region for pie chart visualizations and performance reporting.
- o Summed Sales by Department for departmental ranking.

3. Commission Calculations:

- Calculated TotalCommission for each employee as:
 \$ TotalCommission = \dfrac{(CommissionPercentage \times SalesAmount)} {100} \$
- o Aggregated commissions by department for payout overview.

4. Target Achievement Flagging:

 Generated a logical column, TargetAchieved, to track whether each employee met or exceeded their target.

5. Departmental Target Summation and Achievement Rate:

 Summed Target per department and calculated target achievement rate by comparing achieved vs. set targets.

6. Distribution Analytics:

- o Counted employees per department and age group for staffing analytics. [2]
- Performed ratio and contribution analysis on regional and departmental sales contribution to total revenue.

§ Insights Provided

• KPI Overview:

The dashboard offers clear visualization and tabulation of total sales, profit, employees, commissions, and targets.

Regional & Departmental Strategy:

East region and Electronics department are observed as performance leaders, guiding future resource allocation.

• Workforce Demographics:

Majority of sales are generated by more senior staff, implying experience is a key success factor.

• Commission Analysis:

Commission payouts are closely aligned with high sales, matching best practices in sales compensation.

• Operational Recommendations:

Focus expansion and resource allocation on underperforming regions/departments. Consider revisiting commission structure and employee training based on demographic contribution trends.

Regional Insights

Region	Sales (K)	% of Total
East	564	56.4%
South	389	38.9%
North	351	35.1%
West	165	16.5%

• East is the strongest-performing region, indicating successful strategies or market opportunities.

Departmental Insights

Department	Sales (K)	Employees	Target (K)	Target Met (%)
Electronics	324	10	~0.29	High
Automobile	293	11	~0.34	High
Clothing	271	11	~0.27	High

Department	Sales (K)	Employees	Target (K)	Target Met (%)
Home Decor	221	7	~0.21	Medium
Groceries	290	11	~0.32	High

Employee Demographics

- Age Groups: Most employees are in the 45–55 and 25–35 brackets, suggesting a blend of experienced and mid-career sales personnel.
- By Department: Even distribution across key departments, enabling balanced sales execution.

Recommendations

- Leverage best practices from the East region to boost performance elsewhere.
- Review Home Decor strategies or resource allocation to increase sales and target achievement.
- Refine commission structure if needed to maximize motivation in departments with lower target achievement.
- Maintain balanced hiring across age groups to further diversify sales perspectives.

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