PROJECT REPORT

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Rural Shop Sales Analysis

Submitted by

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Under the Guidance of

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Discipline of CSE/IT

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CERTIFICATE

This is to certify that Aaditya Raj Pandey bearing Registration no. 12523533 has completed INT 551 project titled, **"Rural Shop Sales Analysis"** under my guidance and supervision. To the best of my knowledge, the present work is the result of his/her original development, effort and study.

Signature and Name of the Supervisor
Designation of the Supervisor
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Date: 15-11-2025

DECLARATION

I, Aaditya Raj Pandey, student of P17AC: MTECH Data Science and Analytics (Program name) under CSE/IT Discipline at, Lovely Professional University, Punjab, hereby declare that all the information furnished in this project report is based on my own intensive work and is genuine.

Date: 15-11-2025 **Signature**

Registration No. 12523533 **Aaditya Raj Pandey**

Section 1: Introduction

The Sales Analytics Dashboard created using Microsoft Excel serves as a comprehensive decision-support tool designed to monitor, analyze, and evaluate sales performance across multiple business dimensions. This report explains the complete functional and analytical structure of the dashboard using the Rural Shop Sales Dataset for 2021–2022. The goal is to provide an easy-to-understand overview of how data transforms into meaningful insights through intelligent visualization, pivot table computation, slicer-based interactivity, and well-structured charts. The dashboard is divided into three key analytical pages: **Dashboard 1 (Overall Sales View)**, **Dashboard 2 (Product Analysis)**, and **Dashboard 3 (Salesman Performance)**. Each page highlights different aspects of sales data, offering users a multi-angle understanding of business performance.

The dataset contains daily transactional records including Date, Salesman, Region, Item, Quantity, Unit Price, and Total Sale Amount. These fields collectively allow robust analysis at month-level, region-level, product-level, and employee-level. Excel's Pivot Tables and Pivot Charts form the computational backbone of the dashboard, ensuring dynamic updates whenever filters are applied. Slicers for Item and Region, along with a Timeline for Date, offer high interactivity and allow users to drill down into specific product categories, time periods, or geographical zones.

This dashboard also incorporates thoughtfully designed UI elements such as KPI cards, color-coded panels, icons, navigation buttons, and section dividers. These contribute to a professional and intuitive user experience, making the dashboard not only insightful but also visually appealing. Users can quickly identify trends, seasonality, peak sales months, high-performing products, underperforming regions, and top vs. poor performing employees.

The purpose of this dashboard is to help organizations make data-driven decisions such as optimizing inventory, evaluating salesperson incentives, identifying sales opportunities, improving operational efficiency, and setting realistic growth targets. Every chart, table, slicer, and visual component is deliberately designed to transform raw data into insights that support both strategic planning and day-to-day operational management. The report that follows provides a detailed explanation of every dashboard component, its working, output interpretation, and the underlying analytical logic used to derive conclusions from the dataset.

Section 2: Dataset Overview and Data Preparation

Before building the dashboard, a clean, well-structured dataset is crucial for accurate and dependable analysis. The Rural Shop Sales Dataset for 2021–2022 contains transactional records that capture crucial business attributes. Each row represents a single transaction with these key fields: **Date**, **Salesman**, **Region**, **Item**,

Quantity, **Price of Each Sale**, and **Total Amount of Sale**. The Total Amount column is derived by multiplying Quantity × Price, making it a straightforward revenue indicator for each transaction.

Data quality plays a major role in dashboard reliability. The dataset appears to be clean and well-organized with consistent formatting. All numerical fields are stored as numbers, and dates follow proper date formats, enabling accurate grouping and timeline filtering. A major preparatory step involves grouping dates into Months and Years inside Pivot Tables. This grouping allows higher-level trend analysis and helps track seasonal variations in sales performance. Another crucial step is ensuring that items, regions, and salesman names are consistent so that Pivot Tables aggregate values correctly without duplicates caused by spelling variations.

Once the dataset is verified, Pivot Tables are created for different analytical purposes — revenue by month, revenue by region, revenue by product, quantity sold by product, revenue by salesman, and count of sales. Each Pivot Table is connected to corresponding pivot charts on the dashboard. The use of Excel Tables ensures that Pivot Tables automatically expand when new data is added, simplifying future updates.

The dataset also supports deeper analysis through calculated metrics. For example, “Total Sales Count” is derived using Count of Total Amount field, whereas “Top Performers” and “Poor Performers” are identified using sorted Pivot Table values. This flexible structure ensures that every visual on the dashboard is supported by validated and dynamically calculated data.

The dataset’s structure enables broad multidimensional analysis — time-series, geography-based segmentation, product category evaluation, and employee performance comparison. This foundation is essential because the quality of insights produced by the dashboard depends entirely on the accuracy and structure of the underlying data. With proper preparation, the dataset becomes the driving engine behind the entire analytics system.

Section 3: Dashboard 1 – Layout & Interactive Features

Dashboard 1 acts as the executive summary or top-level view of business performance. It combines KPI cards, regional and monthly trends, and product-level summaries into a cohesive interface. One of the strongest features of this dashboard is its interactive filtering capability, which uses Excel Slicers and a Date Timeline to instantly refresh every chart. This transforms a static Excel sheet into a dynamic analytical interface.

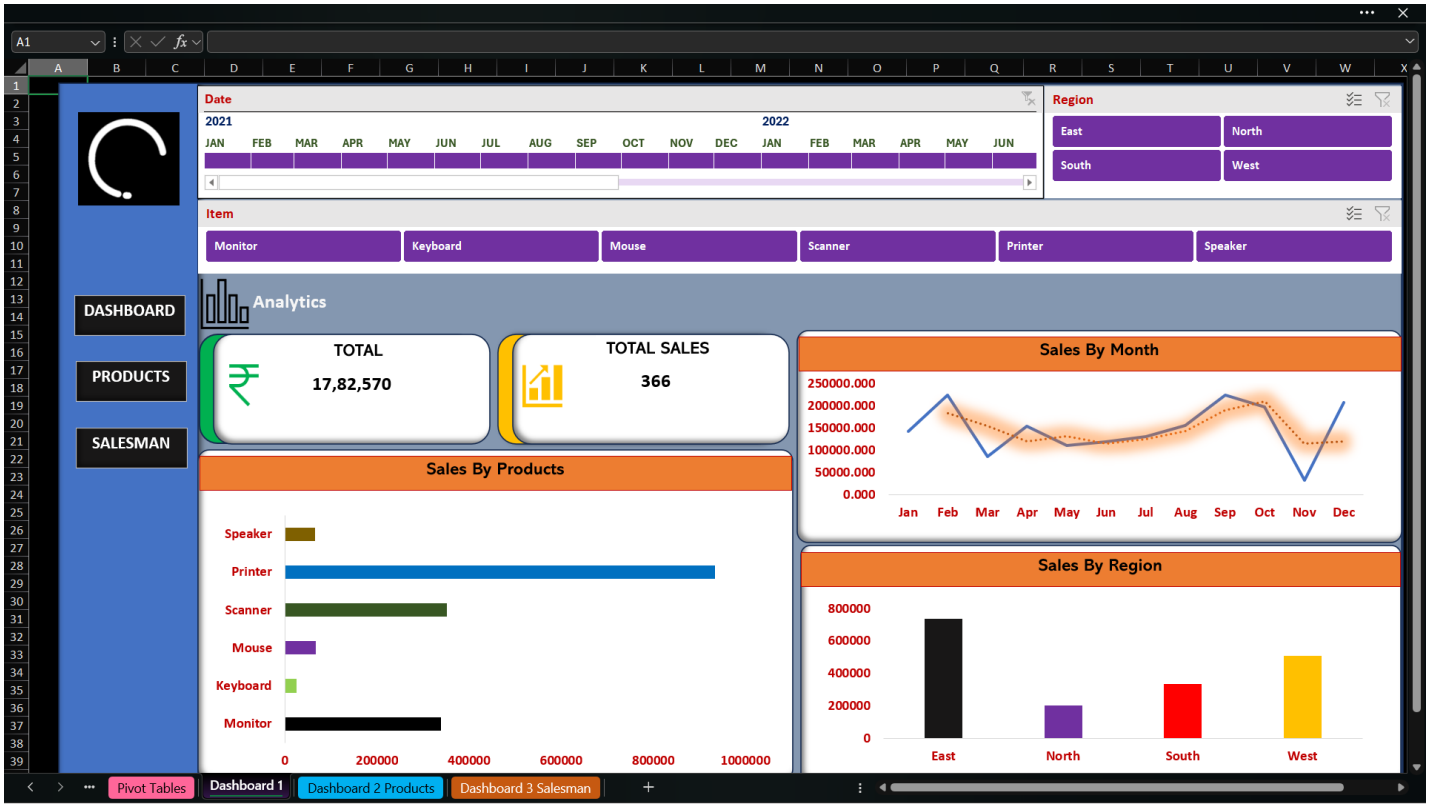
The **Date Timeline** allows users to filter the dashboard by selecting any month or combination of months from January 2021 to June 2022. This is helpful for analyzing short-term performance (e.g., quarterly trends) or long-term patterns. The timeline directly influences Pivot Tables linked to monthly revenue charts, total sales KPIs, and product performance.

Region Slicer enables users to compare sales across East, West, North, and South regions. By selecting one or multiple regions, users instantly see how performance varies geographically. For example, selecting only "West" will show how this region alone contributed to overall sales.

Item Slicer allows filtering by product — Monitor, Mouse, Printer, Speaker, Keyboard, and Scanner. This gives granular visibility into how each product performs month-over-month or region-to-region.

The layout uses clean navigation buttons labeled DASHBOARD, PRODUCTS, and SALESMAN, each linking to respective pages. This enhances usability and mimics a multi-page application. Colors such as blue, purple, and orange are applied consistently to provide a visually engaging and professional interface.

Overall, Dashboard 1 acts as the central hub from which users can explore the dataset in depth. It is designed to provide instant clarity without requiring technical expertise, making it suitable for managers, business owners, and analysts alike.



Section 4: KPI Cards – Total Revenue & Total Sales Count

The KPI cards are designed to give a quick and immediate snapshot of overall business performance. These cards are prominent and visually distinct, using bold icons, clear typography, and high-contrast colors that instantly draw attention. The first KPI card displays **Total Revenue**, showing the cumulative sales amount of **₹17,82,570**. This value comes directly from a Pivot Table that calculates the **Sum of Total Amount of Sale**.

Using Pivot Tables ensures that this metric automatically updates whenever data filters change, making the KPI fully dynamic.

The second KPI card presents **Total Sales Count**, which is the count of all individual transactions, totaling **366**. This is computed using the **Count** aggregation on the Total Amount field. This measure reflects overall customer activity, transaction volume, and sales frequency within the two-year period.

Both KPI cards serve as essential summaries that allow decision-makers to instantly assess whether overall sales activity meets business expectations. The revenue card helps owners understand financial performance, while the sales count indicates customer interaction levels and operational throughput.

The design of the KPI cards is intentionally simple yet visually appealing. Using icons (rupee and bar-chart), rounded borders, and shadow effects enhances readability and adds a modern dashboard aesthetic. These cards are placed at the top of the dashboard because users naturally look there first when trying to understand overall business performance.

Together, the KPI cards form a high-level overview that guides deeper exploration. If revenue appears lower in a filtered period, users can investigate further by analyzing monthly trends, products, or regional performance. If sales count drops, it might indicate reduced demand or fewer customer engagements. Thus, the KPI cards not only summarize performance but also trigger further diagnostic analysis using the rest of the dashboard visuals.

Section 5: Sales by Products – Chart Explanation & Insights

The Sales by Products chart provides a clear understanding of revenue contribution from each product category. Displayed using a horizontal bar chart, this visualization highlights the total sales generated by items such as Printers, Mouse, Monitor, Scanner, Speakers, and Keyboards. Each bar is color-coded to improve distinguishability and visual clarity.

From the chart, **Printers emerge as the highest revenue-generating product**, far outperforming the others with sales exceeding 9 lakh. This suggests strong demand, higher pricing, or better margin-driven sales. On the other hand, **Keyboards appear as the lowest-selling product**, which may invite decisions regarding inventory reduction or promotional strategies to improve movement.

This chart is powered by a Pivot Table that aggregates revenue per product using the **Sum of Total Amount of Sale**. Since the chart is connected to slicers, users can instantly filter results based on region or time period.

For example, selecting “South” may show that Scanner sales outperform Monitors in that region, revealing region-specific patterns.

The significance of this chart lies in strategic product management. Businesses rely on product-level insights to decide on procurement quantities, pricing strategies, and promotional offers. A high-performing product like Printer may deserve increased stocking or bundled sales strategies. In contrast, underperforming items may need targeted marketing, discounting, or even discontinuation depending on their margin contribution.

Furthermore, the product bar chart is positioned prominently because product-level revenue is one of the most crucial dimensions of retail business analytics. Understanding which products drive the most revenue helps streamline operations, reduces overstocking risk, and enhances resource allocation decisions.

Section 6: Sales by Month – Seasonal & Trend Analysis

The Sales by Month chart is one of the most important elements of the dashboard because it helps identify **seasonal sales patterns**, **peak months**, and **business cycles**. Represented using a line chart with smoothed curves and an orange-colored trend overlay, this visualization presents revenue distribution across months from January to December.

This view showcases noticeable fluctuations. For instance, **sales are significantly higher during October and November**, which could be attributed to festive-season demand (Diwali, year-end purchases). Conversely, sales dip around June and July, suggesting seasonal slowdowns. Identifying such seasonal patterns is crucial for inventory planning, staffing, and marketing strategy optimization.

The chart is powered by a Pivot Table that groups dates into Months and Years using Excel’s Group function. This grouping ensures month-level accuracy even if multiple years are included. When a user adjusts the timeline slicer, the chart refreshes immediately to reflect only the selected months.

This chart has strong business value. If an organization notices that June–July consistently show low sales, they may introduce mid-year promotional campaigns to boost performance. Similarly, seeing strong sales in October–November helps businesses prepare with adequate inventory, stock reorders, and logistical planning months in advance.

The smoothed trend overlay provides a more intuitive visual experience, helping users detect upward or downward patterns without getting distracted by monthly fluctuations. The dual-layer design — line + trend — enhances the chart’s analytical depth.

Overall, the Sales by Month chart supports decisions related to demand forecasting, seasonal planning, and sales strategy timing. It is a powerful tool for businesses wanting to understand not just *what* sold, but *when* sales accelerate or decline throughout the year.

Section 7: Sales by Region – Geographic Analysis

The Sales by Region chart provides valuable insight into how revenue distribution varies across geographical zones. Represented using vertical bar charts colored distinctly for East, North, South, and West, this visualization highlights performance differences that can guide regional strategy.

The chart reveals that the **West region leads in total revenue**, crossing over 5 lakh in total sales. The **East region follows**, contributing a strong amount as well. On the other hand, the **North region appears to be the weakest performer**, generating the lowest revenue among all regions. This disparity suggests variation in customer demand, market maturity, or salesman efficiency across regions.

This chart is built using a Pivot Table that aggregates revenue by grouping all transactions under their respective Regional categories. Because the slicers directly control the Pivot Table, the chart automatically updates when a user filters by item or date. For instance, selecting "Printer" may show that West is the strongest market for that product, while North may show relatively poor sales performance.

Understanding regional performance is crucial for decision-making. High-performing regions may require expansion, more stocking, or higher workforce allocation. Meanwhile, underperforming regions call for deeper diagnostic analysis: Are there supply chain issues? Is there reduced customer demand? Are salespeople underperforming? Are competitors more dominant in that area?

Because the chart provides a clear visual comparison, it helps stakeholders instantly understand geographical differences. These insights support strategic planning, including region-specific marketing campaigns, salesman reallocation, pricing adjustments, and inventory distribution.

Section 8: Dashboard 2 – Product-Based Analysis

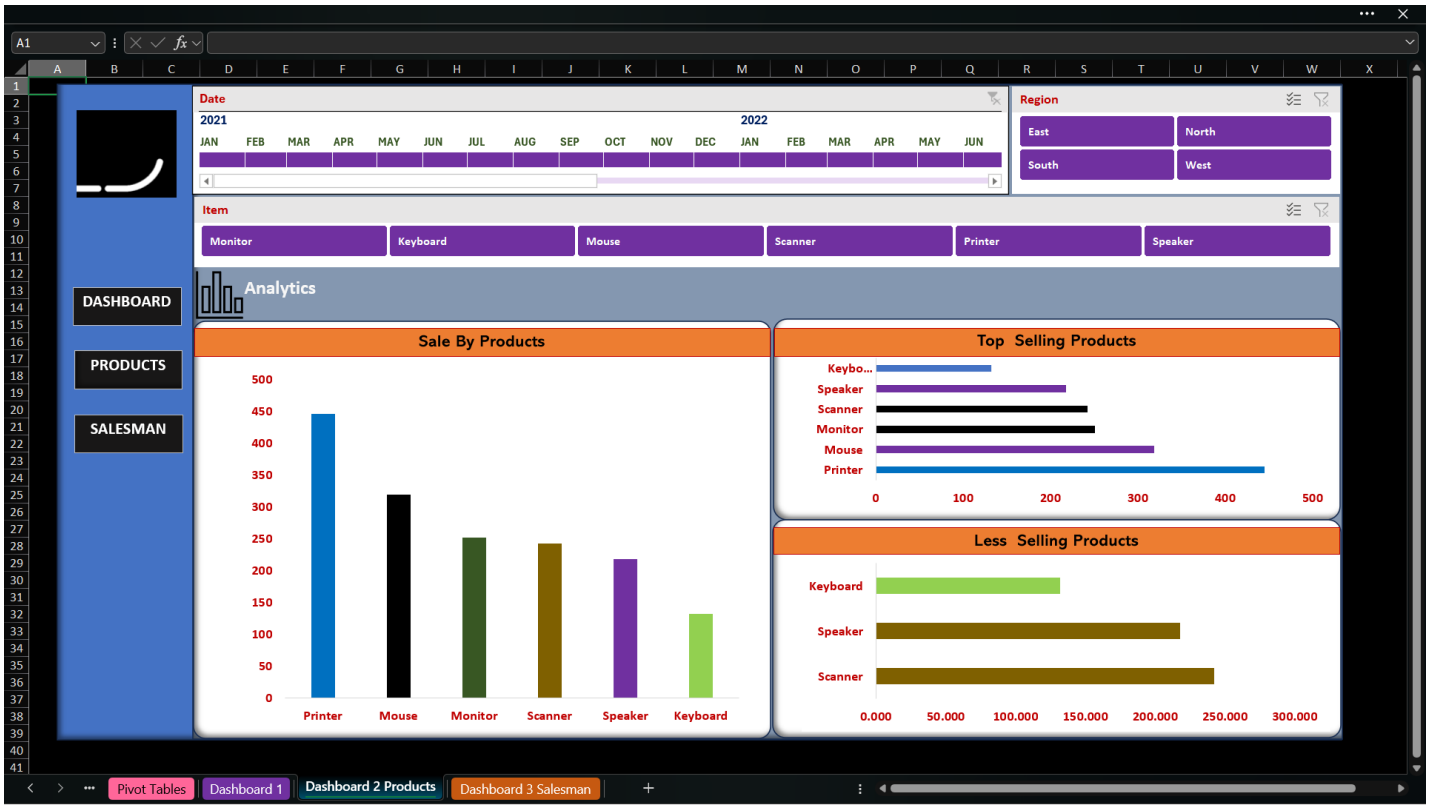
Dashboard 2 provides deeper insights into product-specific performance beyond dollar revenue. This dashboard includes three major charts: **Sales by Products (Column Chart)**, **Top Selling Products (Horizontal Chart)**, and **Less Selling Products**. Together, they offer a complete 360-degree view of product behavior across the business.

The primary chart shows unit sales for each product category. Printers again lead, with over 445 units sold, followed by Mouse and Monitor. Keyboard records the lowest unit count, confirming earlier revenue findings. This quantity-based view is important because high revenue could be due to high price, but quantity confirms true demand—making it helpful for inventory replenishment planning.

The **Top Selling Products** chart focuses only on the highest-performing items. By filtering the items that generate the most revenue or units sold, it gives stakeholders a quick highlight of what drives business growth. This allows the company to prioritize resources, marketing strategies, and stock levels for these top contributors.

Conversely, the **Less Selling Products** chart highlights items such as Keyboard and Speaker, which demand closer management consideration. Poor performance may be due to lack of promotion, low consumer preference, high pricing, or competitive pressures. Identifying underperformers early helps in implementing improvement strategies, such as bundling offers, seasonal discounts, or product discontinuation decisions if necessary.

Together, these charts help businesses optimize product lifecycle management and maintain a healthy mix of fast-moving and slow-moving items. Dashboard 2 is instrumental for procurement teams, inventory managers, and marketing planners.



Section 9: Dashboard 3 – Salesman Performance Analysis

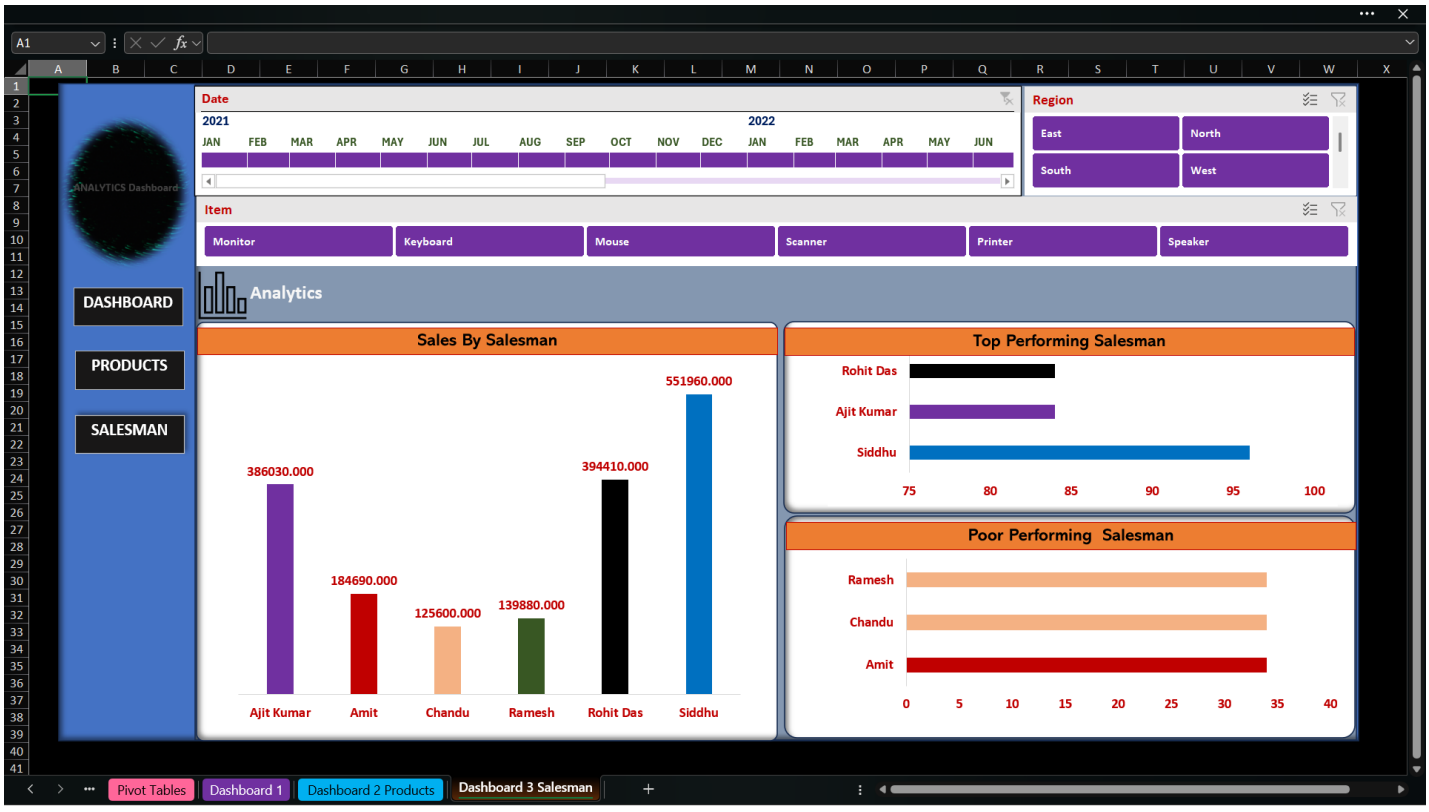
Dashboard 3 centers on measuring and comparing the performance of sales personnel. It includes a **Sales by Salesman** column chart, **Top Performing Salesmen**, and **Poor Performing Salesmen** charts. Each visualization helps identify strengths, weaknesses, and workload distribution.

The main chart shows that **Siddhu** is the highest performer with over ₹5.5 lakh in total sales. Rohit Das and Ajit Kumar follow closely, demonstrating consistent contributions. On the lower end, **Chandu and Amit** show significantly lower performance, indicating room for improvement or additional support.

The **Top Performing Salesman** chart filters out only the best contributors. By separating high performers, managers can evaluate the factors behind their success—strong regional presence, customer relationships, product expertise, or consistent follow-ups.

The **Poor Performing Salesman** chart highlights those who fall short of expectations. This is not just for reprimand but to help identify training needs. These insights encourage data-driven HR decisions such as performance incentives, coaching sessions, or reassignment to better regions.

Overall, Dashboard 3 empowers leadership to improve team efficiency, motivation, and collaboration by showing exactly who is driving growth and who needs targeted intervention.



Section 10: Design Quality, Functionality & Conclusion

The **final section evaluates** the dashboard's design quality and summarizes its business value. The dashboard uses a consistent theme with visually appealing color coding, rounded KPI boxes, intuitive icons, and section dividers that create a modern UI. Navigation buttons replicate application-like behavior, enabling effortless movement across pages. The blue background, orange headers, and purple slicers create a strong visual identity while maintaining clarity.

Functionally, the dashboard excels in interactivity. Slicers and timeline filters refresh all visuals instantly, transforming Excel into a dynamic analytics platform. Pivot Table foundations ensure data accuracy and auto-adjustability whenever filters change. The charts are properly formatted with readable labels, structured axes, and appropriate chart types.

Overall, the dashboard successfully converts raw data into actionable insights. It helps decision-makers understand performance trends, evaluate regional strengths, manage inventory, identify top products, and monitor employee performance. It is both visually strong and analytically rich, making it suitable for presentations, operational meetings, or managerial reviews.

Section 11: Future Scope and Future Work

While the current Excel Sales Analytics Dashboard provides a strong foundation for understanding business performance across products, regions, and sales representatives, there are several meaningful opportunities to expand its analytical depth, automation capabilities, and business intelligence maturity. Future scope and future work revolve around making the dashboard smarter, more scalable, more predictive, and better integrated with ongoing business operations.

One of the most impactful next steps is **incorporating predictive analytics** into the system. Currently, the dashboard reports historical performance; however, by integrating techniques such as trend forecasting, linear regression, or moving averages, the system could predict future sales volumes, seasonal spikes, or possible revenue slowdowns. This forward-looking capability would support better demand planning, stocking strategies, and workforce allocation. Tools like Excel's Data Analysis ToolPak, or exporting data into Python for machine learning modeling, can help evolve the dashboard beyond descriptive analytics into predictive intelligence.

Another important advancement would be transitioning the dashboard from Excel into a **Business Intelligence platform**, such as Power BI or Tableau. BI tools offer automated data refresh, advanced visual interactions, drill-through features, and cloud sharing options. This shift would make the dashboard scalable for larger datasets and multi-user environments, where different departments can access real-time performance metrics

without manually updating spreadsheets. Features like row-level security, mobile dashboards, and natural language queries would further improve usability.

A key future enhancement involves **automation of data entry and updates**. The current dataset is static and manually provided. By connecting the dashboard to automated data pipelines—using Power Query, APIs, or SQL connections—daily or hourly sales data could flow directly into the system, reducing manual workload and error risk. Automated refresh cycles ensure decision-makers always access the latest numbers, making the dashboard a living operational tool rather than a periodic report.

The dashboard can also be expanded with **advanced KPI metrics**, such as profit margin analysis, customer retention indicators, average order value, conversion ratios, or region-wise profitability. These metrics offer deeper business insights beyond revenue and quantity. Customer segmentation analysis could be included if customer-level data becomes available.

Another major scope is enabling **comparative performance analysis** such as year-over-year (YoY), month-over-month (MoM), or quarter-on-quarter comparisons. These comparisons help businesses assess growth tendencies, evaluate strategy impact, and identify long-term changes.

Enhancing salesman analytics with more human-resource-centered indicators—like incentive impact, effort-to-revenue ratios, or improvement trends—would strengthen performance management. Similarly, product lifecycle analysis can help identify items that are emerging, stable, or declining in popularity.

Finally, embedding **interactive dashboards on the company intranet**, documentation of processes, and automated email reporting (daily/weekly snapshots) would make the analytics ecosystem more integrated into business routines.

Overall, the future scope aims to transform a strong Excel dashboard into a full-fledged, automated, predictive business intelligence system that elevates decision-making, strategic planning, and operational efficiency across the organization.