# PHARMACY SALES AND INVENTORY TREND DASHBOARD

[1]M Shirisha, [2] C Eswar Charan, [3] I Adithya, [4] S Siddu, [5] J Adesh
[1]AssistantProfessor, [2345]Students
Department of CSE
Siddhartha Institute of Technology & Sciences, Narapally
mshirishacse@siddhartha.org.in, 23tq1a0580@siddhartha.co.in, 24tq5a0510@siddhartha.co.in, 23tq1a0592@siddhartha.co.in, 23tq1a05a7@siddhartha.co.in,

## Abstract

The Pharmacy Sales and Inventory Trend Dashboard is designed to provide an interactive and efficient platform for analyzing pharmacy sales, inventory levels, and product trends. The system collects and organizes pharmacy transaction data such as medicine names, sales quantities, prices, stock levels, purchase dates, and sales dates. The dashboard transforms this data into meaningful visual reports that help users understand sales performance and inventory movement. Key indicators such as total sales, total quantity sold, available stock, fast-moving medicines, and low-stock products can be displayed through charts, tables, and summary cards. Sales trends can be analyzed over different time periods to identify changes in customer demand and business performance. Inventory analysis helps identify products that require restocking and medicines with slow or excess movement. Product-wise and category-wise analysis can also be used to compare sales performance across different medicine groups. Interactive filters allow users to view information based on date, product, category, or other relevant parameters. The dashboard supports data-driven decision-making by presenting complex pharmacy data in a simple and understandable format. It can help pharmacy managers improve stock planning, monitor sales performance, reduce inventory-related issues, and identify important business trends. Overall, the project demonstrates how data visualization and analytical dashboards can be used to improve pharmacy sales and inventory management.

## I. Introduction

Pharmacy sales and inventory management involves handling a large amount of information related to medicines, sales transactions, stock availability, prices, and customer demand. Proper analysis of this information is important for maintaining sufficient stock and improving the overall performance of a pharmacy. Traditional methods of maintaining sales and inventory records often rely on spreadsheets or manual reports, making it difficult to identify important trends quickly. The Pharmacy Sales and Inventory Trend Dashboard is developed to provide a visual and interactive solution for analyzing pharmacy business data. The dashboard presents important information such as total sales, quantity sold, available inventory, product performance, and low-stock medicines in an easy-to-understand format. Sales trends can be analyzed based on different dates, medicine categories, and products to identify changes in demand. Inventory trends help users understand which medicines are fast-moving, slow-moving, or approaching low-stock levels. Charts, graphs, tables, and summary cards are used to convert raw pharmacy data into meaningful insights. Interactive filters allow users to explore specific products, categories, and time periods according to their requirements. The dashboard can help pharmacy managers

monitor business performance and make better inventory planning decisions. It also reduces the effort required to manually analyze large volumes of sales and stock information. By combining sales analysis and inventory monitoring in a single dashboard, the system provides a clear overview of pharmacy operations. Overall, the project demonstrates how data analytics and visualization can support efficient pharmacy sales monitoring, inventory management, and data-driven decision-making.

## II. Literature Survey

Previous studies in pharmacy and healthcare data management have highlighted the importance of effective sales analysis and inventory control for improving operational efficiency. Research on pharmacy inventory management has focused on maintaining appropriate stock levels, reducing stock-outs, minimizing excess inventory, and identifying medicines with changing demand patterns. Several studies have applied data analytics techniques to historical sales data to understand product demand and support better inventory planning. Data visualization has also become an important approach for presenting large datasets in a simple and understandable form through charts, graphs, tables, and key performance indicators. Studies on business intelligence dashboards have shown that interactive visualizations can help users identify trends, compare product performance, and make faster data-driven decisions. Time-based sales analysis is useful for identifying seasonal variations, peak sales periods, and changes in customer purchasing behavior. Product-wise and category-wise analysis can further help organizations identify fast-moving and slow-moving products. Inventory dashboards have also been used to monitor available stock and highlight products requiring replenishment. The integration of sales and inventory information provides a more complete view of business performance than analyzing these datasets separately. Modern analytical tools allow users to apply filters and interact with data according to specific business requirements. These developments indicate that a dashboard-based approach can improve the accessibility and usefulness of pharmacy business information. Therefore, the proposed Pharmacy Sales and Inventory Trend Dashboard combines sales analysis, inventory monitoring, and interactive visualization to support efficient pharmacy management and informed decision-making.

## III. System Analysis

System analysis is an important stage in developing the Pharmacy Sales and Inventory Trend Dashboard for monitoring pharmacy business performance. The system focuses on analyzing sales transactions, medicine categories, product quantities, prices, and available inventory. Pharmacy sales data is collected and organized into a structured dataset for further analysis. Inventory information is analyzed to identify available stock, low-stock products, fast-moving medicines, and slow-moving products. Sales trends are examined across different time periods to understand changes in product demand. Product-wise and category-wise sales analysis helps identify the medicines contributing most to overall revenue. Key performance indicators such as total sales, quantity sold, number of products, and stock levels are presented through dashboard components. Charts and graphs are used to provide a clear visual representation of sales and inventory trends. Interactive filters allow users to analyze specific dates, products, and categories. The dashboard helps users identify important patterns without manually reviewing large amounts of transaction data. The analyzed

information can support better stock planning, sales monitoring, and replenishment decisions. Overall, the system provides a centralized and visual approach for understanding pharmacy sales and inventory performance.

**Existing System**

The existing pharmacy sales and inventory management system commonly depends on manual records, spreadsheets, or basic billing and stock-management software. Sales transactions are often stored as individual records containing product details, quantities, prices, and transaction dates. Inventory levels may be updated manually after medicines are purchased or sold. Managers generally review spreadsheets or generate basic reports to understand sales performance. Identifying fast-moving and slow-moving medicines can require manual comparison of large amounts of data. Low-stock products may not always be identified immediately when stock information is not continuously monitored. Sales trends across different time periods are also difficult to understand from raw transaction records. Separate files or reports may be maintained for sales and inventory information, making combined analysis more difficult. Traditional reports generally provide numerical information without interactive charts or visual summaries. Changes in product demand may therefore take considerable time to identify. Manual data analysis also increases the possibility of calculation, duplication, and data-entry errors. Comparing product categories and sales performance requires additional effort when information is not presented through a centralized dashboard. Therefore, a visual analytics dashboard can provide a more efficient approach for analyzing pharmacy sales and inventory data.

**Disadvantages of Existing System**

- Heavy dependence on manual data analysis.
- Time-consuming review of large transaction records.
- Limited visualization of sales and inventory trends.
- Difficult to identify fast-moving and slow-moving medicines.
- Low-stock products may not be identified quickly.
- Difficult to compare product and category performance.
- Sales and inventory information may be maintained separately.
- Repeated calculations are required for generating reports.
- Higher possibility of data-entry and calculation errors.
- Limited interactive filtering and data exploration.
- Difficult to identify changing demand patterns.
- Manual report preparation requires additional effort.

**Proposed System**

The proposed system provides an interactive Pharmacy Sales and Inventory Trend Dashboard for analyzing sales and stock-related information in a centralized platform. The system collects pharmacy transaction data containing medicine names, categories, quantities, prices, dates, and inventory information. The collected data is cleaned and organized before being used for analysis and visualization. Important sales indicators such as total revenue, total quantity sold, and product performance are calculated from the available data. Inventory analysis is performed to identify current stock levels, low-stock medicines, and products with high or low movement. Time-based sales

analysis helps users understand daily, monthly, or yearly sales trends. Product-wise and category-wise analysis allows users to compare the performance of different medicines. Dashboard cards provide quick summaries of important business metrics. Charts and graphs display sales patterns and inventory trends in an easy-to-understand format. Interactive filters allow users to select specific dates, products, categories, or other relevant parameters. The dashboard helps users identify products requiring attention and supports better inventory planning. Visual reports reduce the effort required to manually examine large amounts of pharmacy data. Overall, the proposed system provides a simple and effective analytical platform for pharmacy sales monitoring and inventory management.

**Advantages of Proposed System**

- Provides centralized sales and inventory analysis.
- Displays important business metrics clearly.
- Provides interactive charts and visualizations.
- Helps identify fast-moving medicines.
- Helps identify slow-moving products.
- Highlights low-stock products for better monitoring.
- Supports product-wise and category-wise analysis.
- Allows time-based sales trend analysis.
- Provides interactive filtering and data exploration.
- Reduces manual report preparation effort.
- Supports better inventory planning and replenishment decisions.
- Improves understanding of pharmacy business performance.

## IV. Methodology

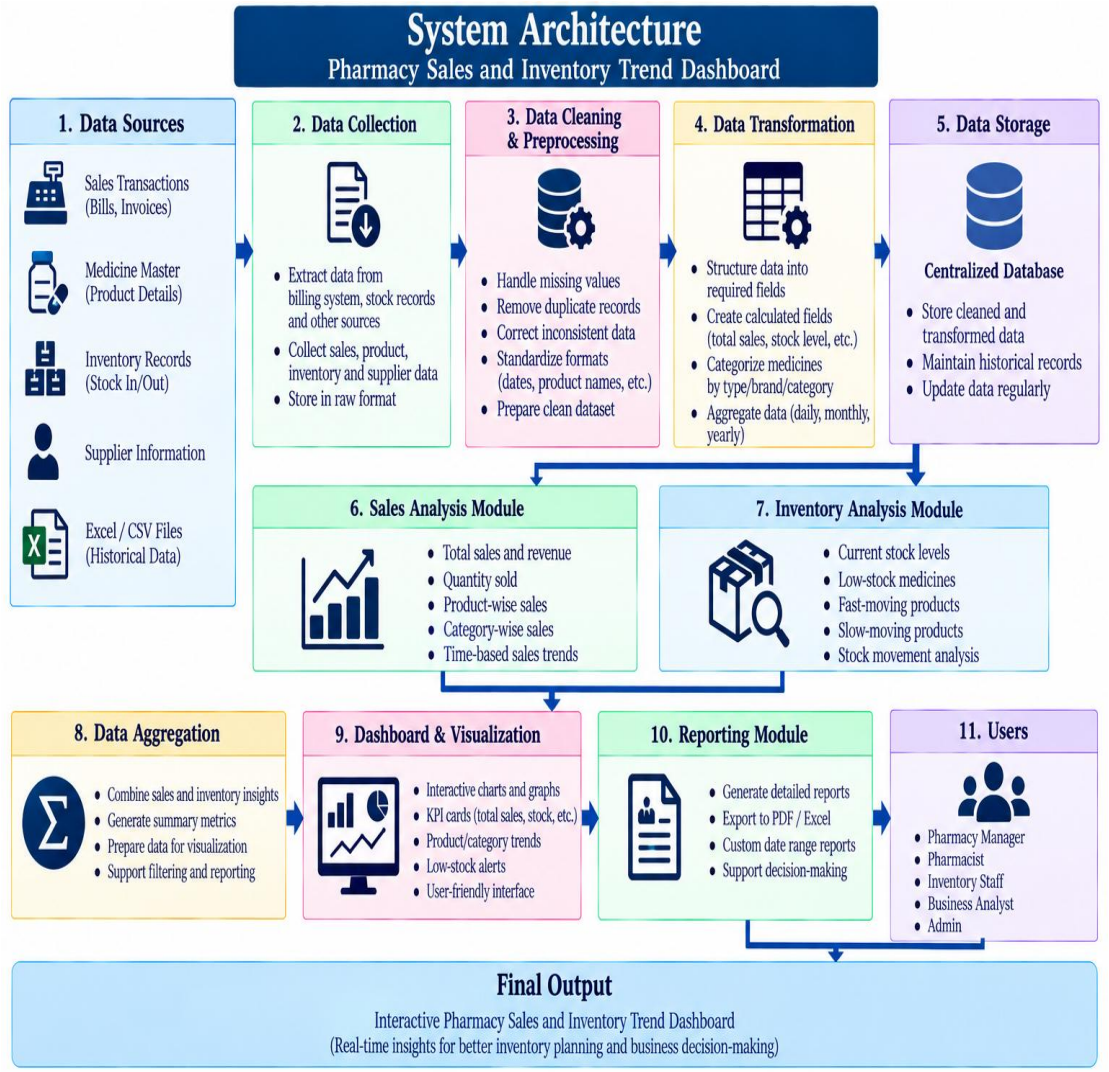
The methodology begins with collecting pharmacy sales and inventory data from the available transaction records. The dataset includes information such as medicine name, category, quantity sold, price, sales date, and stock availability. The collected data is examined and cleaned to remove duplicate, incomplete, or inconsistent records. Relevant fields are transformed into a structured format suitable for analysis. Sales metrics such as total sales, quantity sold, average sales, and product contribution are calculated from the prepared dataset. Inventory metrics are analyzed to identify available stock, low-stock products, and medicine movement patterns. The processed data is then categorized based on products, medicine categories, and time periods. Appropriate charts, graphs, tables, and KPI cards are selected to represent the analyzed information. The dashboard is developed by connecting the prepared dataset with the visualization components. Interactive filters and controls are added to allow users to explore specific products, categories, and time periods. The dashboard is tested to verify the accuracy of calculations, visualizations, and filtering operations. Finally, the completed dashboard is evaluated to determine its usefulness for monitoring pharmacy sales and inventory trends.

**System Architecture**

The system architecture represents the complete workflow of the Pharmacy Sales and Inventory Trend Dashboard from data collection to final visualization. The process begins with the Pharmacy Data Source, which contains sales transactions, medicine

ISSN: 3049-0952
www.jsetms.com

details, prices, quantities, dates, and inventory records. The Data Collection Module gathers the required sales and stock information from the available data source. The Data Cleaning Module removes duplicate, missing, and inconsistent records to improve data quality. The Data Transformation Module organizes the cleaned information into suitable fields and categories for analysis. The Sales Analysis Module calculates revenue, quantity sold, product performance, and time-based sales trends. The Inventory Analysis Module evaluates stock levels, low-stock medicines, and product movement. The Data Aggregation Module prepares product-wise, category-wise, and time-wise summaries. The processed information is connected to the Dashboard and Visualization Module for graphical representation. The KPI Module displays important indicators such as total sales, quantity sold, and inventory status. The Interactive Filter Module allows users to explore the dashboard using dates, products, categories, and other parameters. The Reporting Module presents analyzed information through charts, tables, and summary views for decision-making. Finally, the Final Dashboard Output provides a consolidated view of pharmacy sales performance and inventory trends. Overall, the architecture follows the workflow **Pharmacy Data → Data Collection → Data Cleaning → Data Transformation → Sales Analysis + Inventory Analysis → Data Aggregation → Visualization → KPIs & Filters → Reports → Final Dashboard**.



## V. Result and Output


## VI. Conclusion

The Pharmacy Sales and Inventory Trend Dashboard successfully provides a centralized platform for analyzing pharmacy sales and inventory information. The system organizes sales transactions, medicine details, quantities, prices, and stock information into a structured format for analysis. Sales performance is evaluated using product-wise, category-wise, and time-based trends. Inventory analysis helps identify available stock, low-stock medicines, fast-moving products, and slow-moving products. Key performance indicators provide a quick overview of important pharmacy business metrics. Interactive charts, graphs, tables, and filters make the information easier to understand and explore. The dashboard reduces the effort required to manually analyze large volumes of pharmacy data. It also helps users identify important sales patterns and inventory requirements more efficiently. The visual representation of data supports better monitoring of product demand and stock movement. The system can assist pharmacy managers in making informed decisions regarding sales analysis and inventory planning. Overall, the project demonstrates the effectiveness of data visualization and dashboard-based analytics in pharmacy management. The proposed dashboard provides a simple, organized, and efficient approach for improving sales monitoring, inventory control, and data-driven decision-making.

## References

[1] Kumar, R. D., Prudhviraj, G., Vijay, K., Kumar, P. S., & Plugmann, P. (2024). Exploring COVID-19 through intensive investigation with supervised machine learning algorithm. In Handbook of Artificial Intelligence and Wearables (pp. 145-158). CRC Press.

[2] Swathi, B., Vijay, K., Sushanth Babu, M., & Dinesh Kumar, R. (2024, November). Machine Learning Techniques in Cloud Based Intrusion Detection. In The International Conference on Artificial Intelligence and Smart Environment (pp. 557-564). Cham: Springer Nature Switzerland.

[3] Sv satyakrishna, shirisha rangu ,bhargavi nalacheruve.(2024) Prospective investigation on colorectal cancer with SMOTE on machine learning Algorithm

[4] Dr.G.Vishnu Murthy, BhargaviNalacheruve 1Professor, Department of computer Science & engineering, Anurag University, TS, India. 2Student, Department of computer Science & engineering, Anurag University, TS, India.

[5] V. N. S. Manaswini, K. K, C. Nigam, S. S. Ali, R. Niranjana, and Suman, "Real-Time Object Detection in Drone Surveillance Using YOLOv5," in Proc. 2025 3rd Int. Conf. IoT, Communication and Automation Technology (ICICAT), Gorakhpur, India, 2025, pp. 1–6, doi: 10.1109/ICICAT68430.2025.11414670.

[6] B. Soundarya, V. N. S. Manaswini, M. Ayyakrishnan, R. D. Kumar, "Contextual Analysis of Big Data Analytics in Intelligent Transportation Frameworks," in Intersection of Artificial Intelligence, Data Science, and Cutting-Edge Technologies: From Concepts to Applications in Smart Environment, Lecture Notes in Networks and Systems, vol. 1353, Cham: Springer, 2025, doi: 10.1007/978-3-031-88304-0_79.

[7] R. D. Kumar, V. N. S.Manaswini, "Applications of blockchain in smart cities: detecting fake documents from land records using blockchain technology," in Blockchain for Smart Cities, Elsevier, 2021, pp. 105–117, doi: 10.1016/B978-0-12-824446-3.00017-X.

[8] Tejavath Veeramma, Badarla Anil, Guguloth Ravinder, "An advanced movie recommender using collaborative filtering and sentiment analysis," International Research Journal of Modernization in Engineering Technology and Science, vol. 7, no. 7, July 2025, doi: 10.56726/IRJMETS81618.

[9] Ravi Kumar Banoth, Ramana Murthy B V, "Automatic crop recommendation system using LightGBM and decision tree machine learning models," Journal of Machine and Computing, vol. 5, no. 1, pp. 343, Jan. 2025, doi: 10.53759/7669/jmc202505026.

[10] Ravi Kumar Banoth, Dr. B.V. Ramana Murthy, "Smart agriculture through IoT and machine learning for analyzing carbon footprints," in Proc. Int. Conf. Computer Science and Communication Engineering (ICCSCE), Apr. 2025.

[11] Ravi Kumar Banoth, B. V. Ramana Murthy, "Soil image classification using transfer learning approach: MobileNetV2 with CNN," SN Computer Science, vol. 5, art. no. 199, 2024, doi: 10.1007/s42979-023-02500-x.