TVSNEXT
Ai Digital Platforms

AI and Data Transform Midwest Provider's Healthcare Operations for Enhanced Efficiency and Patient Satisfaction

👤 About The Client

Our client is a prominent healthcare provider with a robust healthcare system comprising numerous hospitals and clinics across the Midwest region. Their services are tailored to meet the needs of a diverse patient base and encompass a comprehensive range of medical care, including primary healthcare and specialized treatments.

The Problem

The healthcare system faced several challenges that impacted their operational efficiency and patient satisfaction. This included:

- **No-Show Patient Wait Times:** The client experienced high rates of patient no-shows, leading to inefficient staff time and resources and longer wait times for patients who did attend their appointments.

- **Inefficient Inventory Management:** The client's inventory management system could have been more relaxed, leading to stock-outs, overstocking, and difficulty tracking expiration dates. This caused delays in patient care and increased costs.

- **Staffing and Scheduling Challenges:** The client needed help optimizing their staffing levels and scheduling, which led to inefficiencies, overtime costs, and potential burnout for healthcare professionals.

The Approach

TVS Next proposed a comprehensive solution that leveraged data and AI to address the client's challenges. We focused on three key areas:

- **Predictive Analytics for No-Show Mitigation:** Developed a machine learning model that analyzed patient data, appointment history, and external factors to predict patient no-shows. This allowed the client to reach high-risk patients and proactively implement strategies to reduce no-shows.

Services

Generative AI
Data Modernization & Management

Technology

- Apache Kafka, AWS Glue, or Azure Data Factory
- Amazon S3, Azure Data Lake Storage, or Google Cloud Storage
- Apache Spark or Databricks
- Python
- Pandas, NumPy, and SciPy
- Logistic Regression, Decision Trees, Random Forest, XGBoost, LightGBM
- Time Series Forecasting (ARIMA, Prophet, Facebook's Prophet)
- Linear Programming, Constraint Optimization, Reinforcement Learning
- Tableau, Power BI, or Plotly/Dash for interactive dashboards and reports

- **Digitized Inventory Management:** Implemented a cloud-based inventory management system that used RFID tags and sensors to track stock levels in real-time. This system also incorporated expiration date tracking and automated ordering based on usage patterns.

- **Workforce Optimization:** Used AI-powered algorithms to analyze staffing data, patient flow, and historical trends to create optimized schedules. This resulted in better staff utilization, reduced overtime costs, and improved work-life balance for healthcare professionals.

The Process

Data Collection and Analysis: Worked closely with the client to gather relevant data from various sources, including patient records, appointment systems, inventory management systems, and staff scheduling software.

Model Development and Testing: Our data science team developed and tested the predictive analytics model for no-show mitigation and workforce optimization algorithms. We used historical data to train and validate the models.

System Integration: We integrated the new inventory management system with the client's IT infrastructure, ensuring seamless data flow and compatibility with other systems.

User Training and Change Management: We provided comprehensive training to the client's staff on the new systems and processes. We also worked with them to develop change management strategies for a smooth transition and adoption of the latest technologies.

The Result

Our tech consultancy's data-driven solutions have transformed the client's healthcare system, making it more efficient, cost-effective, and patient-centric. We have helped clients overcome their challenges by leveraging data and AI and delivering better healthcare outcomes. Implementing our data-driven solutions improved the client's operational efficiency and patient satisfaction.

Key Outcomes

25%
reduction in patient no-show rates

90%
reduction in stock-outs.

$ 2 million
saved annually in inventory costs.

15%
reduction in overtime costs

20%
improvement in staff utilization

15%
increase in patient satisfaction scores.