

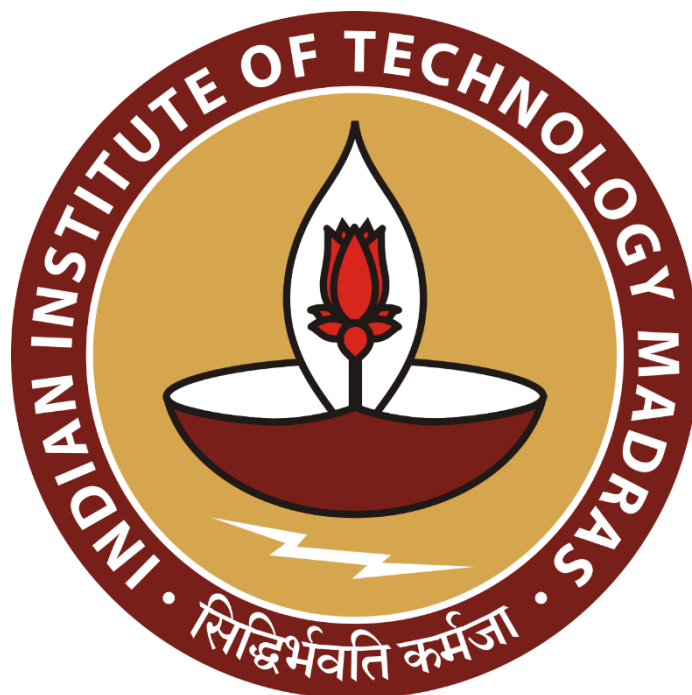
Data-Driven Optimization for B2B HVAC&R Operations

Proposal report for the BDM capstone Project

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1 Executive Summary

Blue Star, India's foremost Heating, Ventilation, Air Conditioning, and Refrigeration Company, has a branch office in Lucknow near IT metro station. Mr. Pravesh Upadhyay is the area manager of the Uttar Pradesh state and majorly involves in B2B type dealings. In the financial year 2022-23 they recorded 12 crores plus of revenue generation in this particular model alone.

Currently they face operational challenges due to the absence of a robust data-driven approach. Hindered decision-making and efficiency, exacerbated by complex processes and inconsistent data recording, necessitate transformative strategies. Mr. Pravesh Upadhyay understands the importance of a robust data driven policy making, for that he wants to get acquainted with the requirements, processes and strategies involved in data driven decision-making and also wants to show his colleagues the impact regularly logging and maintaining data.

Utilizing Python, the proposal aims to enhance data literacy, streamline processes, and evaluate retailers. Notably, Blue Star employs the SAP Point of Sale (PoS) system, reflecting a commitment to technological advancements and adding a layer of sophistication to their data management capabilities, thereby contributing to the effectiveness of the proposed solutions. The proposed initiatives are poised to fortify Blue Star's position in the dynamic HVAC&R industry by fostering adaptability, efficiency, and strategic growth.

2 Organization Background

Blue Star, India's leading HVAC&R Company, commands an annual revenue surpassing ₹7977 crores (972 million USD). With 30 offices, 7 modern manufacturing facilities, 8000 stores and 3132 employees, it stands as a market leader. The company's integrated business model, encompassing manufacturing, contracting, and after-sales services, distinguishes it significantly. Blue Star serves diverse needs, from corporate and commercial applications to residential comfort. Additionally, it has expanded into water purifiers, air purifiers, and air coolers. Operating in over 4,100 talukas, Blue Star products adorn every third commercial building in India.

Blue Star's legacy of serving the community and its dedication to maintaining the highest standards in the industry have positioned it as a trusted and preferred choice.

3 Problem Statement

1. Evaluate the performance of retailers.
2. Implement a data-driven approach to optimize HVAC&R business operations.
3. Assess demand and supply dynamics within the HVAC&R industry.
4. Identify opportunities for business expansion.
5. Develop strategies for turnkey solutions and specialized industrial projects.

4 Background of the Problem

The current absence of a robust data-driven approach has hindered Blue Star's ability to optimize its HVAC&R business operations effectively. Erroneous methods have limited the company's capacity to gather, process, and leverage data for informed decision-making.

4.1. Major Causes of Problems:

1. Complexity in End-to-End Processes: Maintaining a large number of variables poses a challenge in maintaining operational efficiency and necessitates a more cohesive and integrated approach to ensure a seamless flow of activities.

2. Assessment of Demand and Supply Dynamics: Understanding and adapting to the dynamic demand and supply landscape within the HVAC&R industry is imperative. The current methods may not provide the depth of analysis required to optimize production and distribution processes, potentially affecting responsiveness to market fluctuations.

4.2. Internal Problems:

1. Performance Evaluation of Retailers: The performance evaluation of retailers within the HVAC&R industry is crucial for ensuring optimal market reach and customer satisfaction. The current lack of a standardized framework for assessing retailer performance has the potential to impact the overall effectiveness of Blue Star's distribution network.

2. Inconsistent Data Recording: Missing out recordings is frequent.

4.3. External Problems:

1. Measurement of Process Efficiency: Efficiency in the end-to-end process, from manufacturing to after-sales services, is a key determinant of overall operational success. The absence of a systematic approach to measure and enhance process efficiency may lead to suboptimal performance and resource utilization.

5 Problem Solving Approach

Implementation of a Robust Data-Driven Approach:

- Utilize machine learning algorithms for predictive modeling and trend analysis.
- Enhance data literacy and encourage a data-driven culture.

Demand and Supply Dynamics Assessment:

1. Advanced Forecasting Models:

- Implement advanced forecasting models to predict market trends and demand fluctuations.
- Leverage historical data and market intelligence for a more accurate analysis of industry dynamics.

2. Supply Chain Visibility:

- Enhance supply chain visibility by integrating systems and technologies for real-time tracking.
 - Use Python for real-time data integration from different supply chain components.
 - Implement Python-based dashboards for visualizing supply chain metrics and trends.
 - Implement a demand-driven supply chain approach to respond effectively to market fluctuations.

Retailer Performance Evaluation:

1. Retailer Scorecard System:

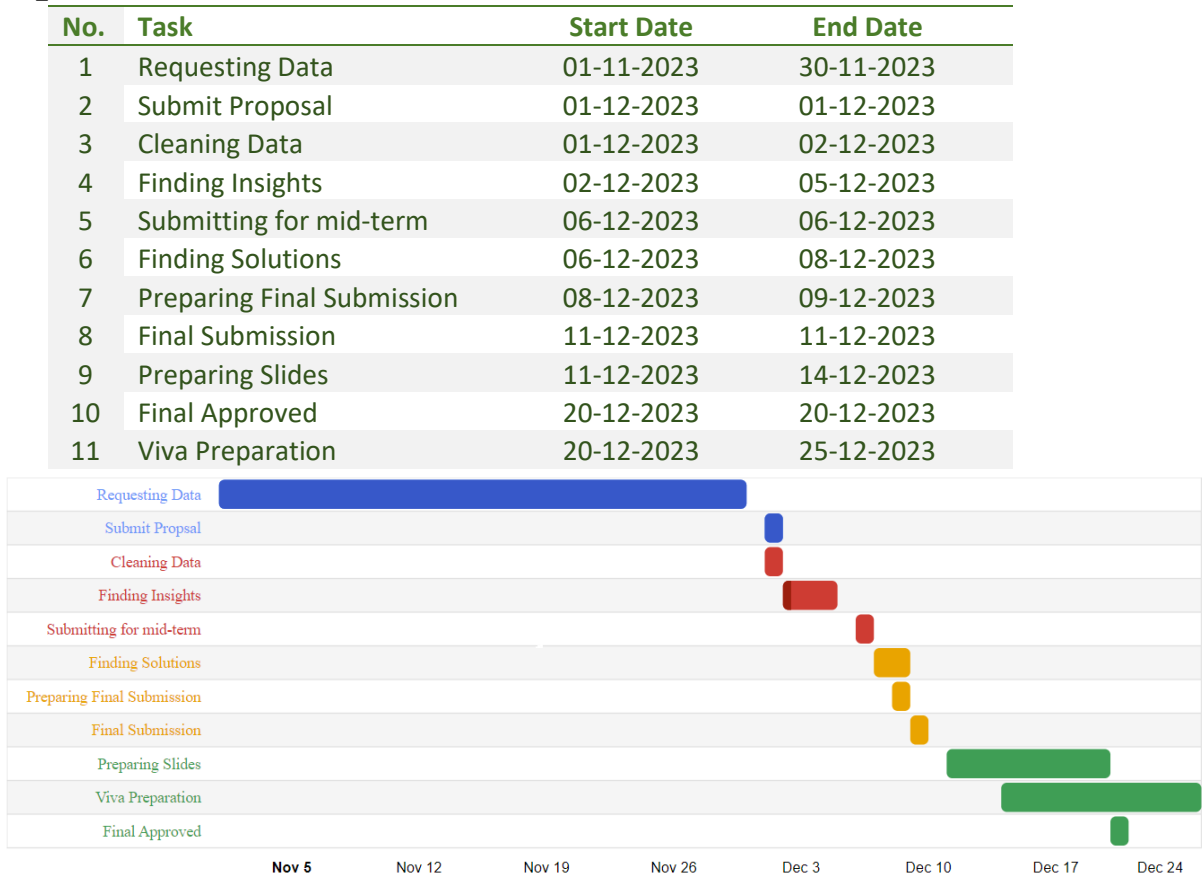
- Use Python's Matplotlib or Seaborn for visualizing performance metrics.

- Regularly update and communicate the scorecard to retailers to foster transparency and improvement.

2. Data Recording Automation:

- Introduce automated systems for data recording to reduce inconsistencies and errors.
- Implement regular checks and audits to ensure the accuracy and completeness of recorded data.
- Conduct regular process audits and incorporate feedback for ongoing refinement.

6 Expected Timeline



7 Expected Outcome

Upon successful implementation of the proposed strategies, we expect transformative outcomes:

- Enhanced visibility into operational metrics, enabling better decision-making.
- Implementation of Python-based advanced analytics for actionable insights and predictive modelling.
- Anticipation of market trends, demand fluctuations, and optimized production processes.
- Standardized retailer scorecard system facilitated by Python applications.
- Advanced forecasting models and real-time supply chain visibility powered by Python.
- Improved responsiveness to market fluctuations and optimized inventory management.

In conclusion, the strategic integration of Python is anticipated to bring about a comprehensive transformation, fostering efficiency, adaptability, and strategic growth in Blue Star's dynamic HVAC&R operations.