



Project Title:

Inventory Integrity, Business Optimization and Crisis Management in a small scale Textile Manufacturing and Trading Enterprise

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Business Problems

1. Analyzing business operation and supply chain
2. Assessing inventory discrepancy
3. Clarifying uncertainty in finance and impact
4. Optimizing accountability and debt management
5. Analyzing employee satisfaction and reliability
6. Potential risks : analysis and regulatory compliance
7. Assessment on resource allocation, crisis handling and long term sustainability
8. Market Research
9. SWOT Analysis of the Impact of Digitization and Digital marketplaces on Cottage and Small-Scale Industries in Semi & Unorganized sector Industries in Tier-2/3 Cities in India.

Acknowledgement :

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01 Introduction

This study focuses on Khushbu Textile, a family-operated enterprise registered as a Small Industry in 2005 in Bhagalpur, Bihar, India. Initially a traditional weaving business, it has evolved into a small-scale, semi-organized MSME serving both B2B and B2C markets.

It weaves natural and synthetic threads into raw cloths for other businesses and offers weaving services. Recently, it ventured into the B2C segment, producing traditional Indian attire marketed online.

The project was initiated to address several pressing issues faced by Khushbu Textile, including inventory discrepancies, stock disappearance, financial instability, and the overall inefficiency in business operations. These challenges were significantly impacting the company's profitability and operational integrity.

The objective of the BDM project at Khushbu Textile was to enhance operational efficiency and financial health by addressing key issues. The project focused on optimizing business operations and supply chain processes, correcting inventory discrepancies, and managing stock disappearances. Additionally, it aimed to improve financial clarity, accountability, and debt management, while also enhancing employee and vendor reliability.

02 Methodology / Approach

The methodology employed a blend of quantitative and qualitative analysis techniques to tackle operational inefficiencies and inventory discrepancies. Utilizing the Lean Six Sigma's DMAIC framework provided a structured approach to problem-solving. Root Cause Analysis was instrumental in identifying underlying causes of discrepancies, while machine learning techniques were leveraged to predict future trends and behaviors. Additionally, various statistical tests validated the findings, ensuring robustness in the results. Data collection was comprehensive, involving direct surveys, financial records, and digital sales data, allowing for a thorough examination of the business's operational dynamics.

03 Methods used for Data Analysis

The following methods collectively span statistical analysis, operational process improvements, financial forecasting, and employee and vendor assessments, enabling a comprehensive approach to solving the business challenges:

- Process Capability Analysis using flow chain Diagram
- Descriptive Statistical Analysis
- Mann-Whitney U Test
- T-Test
- Run Chart Analysis
- Regression Analysis
- Financial Ratios and Radar Chart
- Forecasting Using ARIMA and SKTime
- Time-Series Analysis
- Correlation Analysis
- Monte Carlo Simulation
- Root Cause Analysis
- Reliability and Satisfaction Analysis
- Customer Segmentation
- Market Size and Competition Overview
- SWOT Analysis

04 Metadata

Metadata for key datasets used in this project are:

- Messo Sales Data (Jan 2022 - Sep 2023): Analyzes sales performance; fields include Order_date, Quantity, Order_status, Messo_price.
- Raw Tailor Data: Monitors flow from raw materials to finished goods; includes Tailor_name, Date, types, and quantities.
- Inventory Data: Assesses stock management; tracks monthly stock levels and variations.
- Employee Survey Data: Evaluates employee satisfaction and demographics; includes satisfaction ratings and professional growth opportunities.
- Approximated Financial Data (Jun 2022 - Sep 2023): Analyzes financial health; includes balance sheets and profit/loss details.
- Quantized Business Process and Operation Index: Measures operational efficiency and effectiveness across various business aspects.

05 Results



Figure 1: Supply chain of Khushbu textile; lacks standards, oversight, posing significant operational risks.

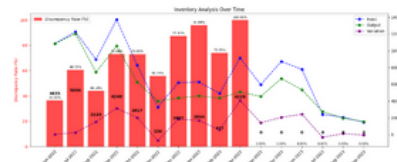


Figure 2: Inventory Audit over time shows theft drop after firing manager in April 2023.

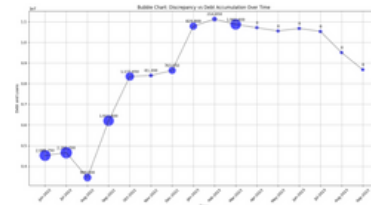


Figure 3: Correlation between debt and inventory discrepancy, rising debt correlates with increasing monthly inventory losses.

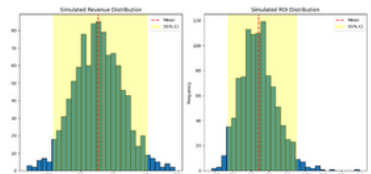
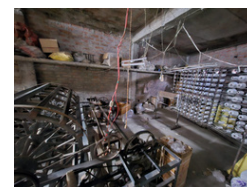


Figure 4: Simulated Revenue and ROI Distribution, enterprise's stable revenue and ROI within safe levels

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Conclusion / Recommendations

Khushbu Textile's strategic enhancements included adopting advanced inventory systems, strengthening employee training, conducting regular audits, and optimizing supply chain processes. Debt settlement with vendors showing discrepancies and taking legal action against those involved in misconduct were crucial. The project also recommend applying for government schemes like Standup India to bolster financial health. These changes led to a substantial increase in revenue, from 12 lakhs in November 2023 to 50 lakhs in December 2023, and resolved miscalculated sundry credits worth about 20 lakhs. Monthly revenue needs to stay above 3.75 lakhs with an ROI of 0.30 for sustained success. These are just a few highlights; the project delivered many more positive outcomes.



Other resources/data/analysis Links:



Interview and Testimonials



BDM Project Folder