# ST6000CEM INDIVIDUAL PROJECT PREPARATION

Project Proposal

"Predictive and Prescriptive Analytics for Efficient Inventory Management for Fashion Retailers in Nepal"

By  
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# Table of Contents

1. Introduction

2. Aims and Objectives

3. Justification

4. Research Questions

5. Literature Review

6. Methodology

7. Tools and Technologies

8. Integration

9. Project Plan

10. Risk Plan

11. SWOT Analysis

12. Conclusion

13. References

14. Appendix

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Table of Figures

Introduction

In competitive fashion retail industry, efficient inventory management is crucial for making profits and keeping customers satisfied. The constantly changing fashion trends, seasonal demands, and customer preferences make it difficult to maintain the right level of inventory. In Nepal, where the fashion retail industry is growing rapidly, the use of data-driven methods for inventory management is becoming more important.

Predictive analytics is used to predict future trends based on past data, helping retailers avoid having too much or too little stock. Prescriptive analytics offers practical solutions based on these predictions, guiding retailers on how to restock and organize their inventory. By combining these methods, better decisions can be made, costs can be reduced, and the shopping experience for customers can be improved.

This study focuses on how predictive and prescriptive analytics can be applied to manage inventory for fashion retailers in Nepal. The aim is to explore how data-driven strategies can solve inventory challenges and support business growth in this expanding market.

Figure : Predictive Analysis

Aims

Predictive and Prescriptive Analytics for Efficient Inventory Management for Fashion Retailers in Kathmandu

Objectives

Data will be collected and preprocessed from sales records, market trends, and seasonal factors in the local context.

Predictive analytics will be applied to forecast demand patterns, incorporating the impact of festivals and cultural events in Kathmandu.

Prescriptive analytics models will be developed to provide optimal inventory management strategies tailored to the market.

The proposed solutions will be tested and evaluated using real-world data from selected fashion retailers in Kathmandu.

Data privacy will be ensured, and efforts will be made to mitigate biases in analytics models to ensure fairness and reliability.

Recommendations will be provided for developing sustainable and adaptive inventory systems to improve efficiency and address future challenges in the Kathmandu fashion retail sector.

Justification

The fashion retail industry in Nepal, particularly in Kathmandu, faces challenges in inventory management due to rapidly changing fashion trends, seasonal variations, and unpredictable consumer preferences. These challenges often result in overstocking, leading to waste, or understocking, which can cause missed sales opportunities. Traditional inventory management practices may not be sufficient to handle the dynamic nature of the fashion industry in this region.

To address these issues, the proposed solution integrates predictive analytics to forecast demand based on historical sales data, market trends, and seasonal factors. It also utilizes prescriptive analytics to recommend optimal inventory management strategies. By combining these approaches, the system aims to improve decision-making, reduce costs, and enhance customer satisfaction.

A diagram can be included to illustrate the problem and solution. It might depict the current inventory management challenges (e.g., overstock/understock, fluctuating demand) and how the proposed system leverages data-driven analytics to address these issues.

Research Questions

What are the major inventory management challenges faced by fashion retailers in Kathmandu?

How can predictive analytics be effectively applied to forecast demand patterns for fashion retailers in Nepal?

What are the key factors, such as seasonal variations and cultural events, that influence inventory needs in Kathmandu?

How can prescriptive analytics models be designed to optimize inventory strategies for the local market?

What measures can ensure data privacy and reduce biases in the analytical models?

How effective are the proposed solutions in addressing the inventory challenges specific to Kathmandu's fashion retail industry?

# Literature Review

Review of existing approaches in predictive and prescriptive analytics for inventory management.

# Methodology

This study follows a data-driven approach using machine learning models for demand forecasting and optimization.

# Tools and Technologies

Python, TensorFlow, Power BI, and SQL for data analysis and visualization.

# Integration

Integration with existing retail POS systems for real-time inventory management.

# Project Plan

A detailed Gantt chart showing the timeline for research, development, and testing.

# Risk Plan

Possible risks include data inaccuracy, bias in predictive models, and system adoption challenges.

# SWOT Analysis

Strengths: Data-driven insights, Weaknesses: Dependence on data quality, Opportunities: Market expansion, Threats: Competitive landscape.