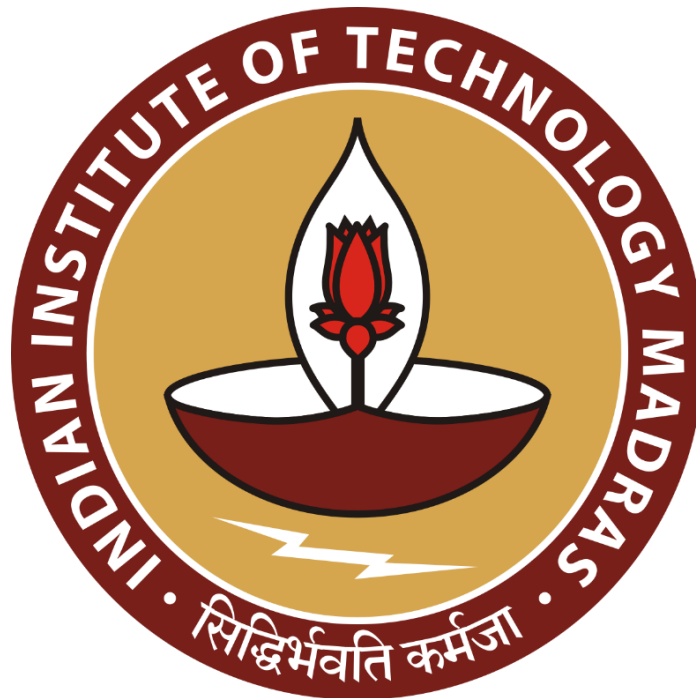# Optimizing Sales and Profitability for a Multi-Category Retail Superstore

## A Proposal report for the BDM capstone Project

Submitted by

Name: Parth Kacha

Roll No: 23f1002650

IITM Online BS Degree Program,

Indian Institute of Technology, Madras, Chennai

Tamil Nadu, India, 600036

# Contents

# **Declaration Statement**

I am working on a Project Title "Optimizing Sales and Profitability for a Multi-Category Retail Superstore". I extend my appreciation to Superstore Sales Team, for providing the necessary resources that enabled me to conduct my project.

I hereby assert that the data presented and assessed in this project report is genuine and precise to the utmost extent of my knowledge and capabilities. The data has been collected from Kaggle's public data repository, and all analysis has been performed independently using Tableau.

Additionally, I affirm that all procedures employed for the purpose of data collection and analysis have been duly explained in this report. The outcomes and inferences derived from the data are an accurate depiction of the findings acquired through thorough analytical procedures.

I am dedicated to adhering to the information of academic honesty and integrity, and I am receptive to any additional examination or validation of the data contained in this project report.

I understand that the execution of this project is intended for individual completion and is not to be undertaken collectively. I thus affirm that I am not engaged in any form of collaboration with other individuals, and that all the work undertaken has been solely conducted by me. In the event that plagiarism is detected in the report at any stage of the project's completion, I am fully aware and prepared to accept disciplinary measures imposed by the relevant authority.

I agree that all the recommendations are business-specific and limited to this project exclusively, and cannot be utilized for any other purpose with an IIT Madras tag. I understand that IIT Madras does not endorse this.

*Parth*

Signature of Candidate: (**Digital Signature**)

Name: Parth Kacha

Date: 13/10/2025

# 1. Executive Summary

This project, "Optimizing Sales and Profitability for a Multi-Category Retail Superstore," focuses on analyzing key business trends using the Superstore dataset. The dataset represents a retail superstore operating across multiple regions in the USA, dealing with categories such as furniture, office supplies, and technology.

The business aims to understand how regional sales performance, discounting strategies, and customer segments influence profitability. Despite steady sales, the organization faces fluctuating profits due to imbalanced discount policies and inefficient shipping modes.

The project utilizes Tableau to create interactive dashboards and charts visualizing regional trends, profit margins, product performance, and customer purchasing behavior. By identifying loss-making segments, unprofitable regions, and high-return categories, the project will guide strategies to improve overall profitability.

Through data visualization and trend analysis, the project supports decision-making for profit optimization, inventory control, and logistics management. The expected outcome is to deliver actionable insights into profitable and loss-making segments, evaluate the impact of discounting on margins, and reveal region-wise sales patterns. These findings will help refine discount policies, enhance shipping efficiency, strengthen inventory planning, and ultimately increase profitability.

Ref:

1. https://asana.com/resources/executive-summary-examples

2. https://www.projectmanager .com/blog/write-an-executive-summary

# 2. Organization Background

This organization Superstore is a multi-category retail company operating across four regions in the United States. This company specializes in furniture, office supplies, and technology products, serving a diverse customer base through both B2B (business-to-business) and B2C (business-to-consumer) channels. The Sample  Superstore dataset, sourced from Kaggle's public repository, contains 9,994 sales records across four regions. Superstore aims to enhance its sales efficiency and profitability by analysing factors such as regional performance, discount strategies, and customer segments.

Ref:

1. https://www.business.com/articles/writing-a-company-history/

2. https://bizfluent.com/write-organizational-background-5883.html

# 3. Problem Statement

3.1Problem statement 1: Determining which product categories and sub-categories contribute most to profit and which results in losses.

3.2 Problem statement 2: Analyzing the impact of discounts and shipping modes on sales performance and overall profitability.

3.3 Problem statement 3: Identify regional sales trends and customer segments that can be targeted to maximise revenue growth.

Ref:

1. https://project-management.com/what-is-a-problem-statement/
2. https://www.isixsigma.com/getting-started/how-to-write-an-effective-problem-statement/
3. https://www.managementstudyguide.com/defining-project-problem-statement.htm

# 4. Background of the Problem

The retail industry faces ongoing challenges such as fluctuating customer demand, competitive pricing, and logistical inefficiencies. For multi-category superstores, these challenges are due to the wide range of products, diverse customer preferences, and region-specific demand patterns. In the sample dataset, profit margins show significant variation across product categories and regions. High discounts on certain products reduce profitability, while delay in shipping and high deliver costs negatively impact customer satisfaction.

The internal factors include inconsistent marketing strategies , ineffective discount prices, poor inventory management, and not reliance on data driven decisions. External factors include intense market competition, changing consumer behaviour, economic conditions, and logical constraints.

These problems arise primarily due to lack of available data for decision-making. To address them, it is essential to identify high-profit regions, optimize discount strategies, and streamline shipping processes. Using Tableau visualization and analytics, this project explores the relationships between sales, discounts, and shipping metrics to provide actionable insights, enabling the superstore to improve profitability, operational efficiency, and customer satisfaction.

Ref:
1. https://fhsu.pressbooks.pub/aep-research/chapter/background/
2. https://readwriteperfect.com/whats-the-difference-between-the-problem-background-and-problem-statement-in-your-dissertation-chapter-1/

# 5. Problem Solving Approach

**Data Collection**

The project utilizes the "Superstore" dataset, sourced from Kaggle, representing sales transactions from a multi-category retail superstore operating across U.S. regions. The dataset includes attributes such as Order Date, Sales, Profit, Discount, Category, Sub-Category, Region, and Customer Segment. Before analysis, data preparation is performed by handling missing values, correcting data types, and removing duplicates. Outliers and inconsistencies are examined using summary statistics such as mean, median, mode, and standard deviation to ensure accuracy and uniformity in the dataset.

**Data Cleaning Process**

- Missing or null entries will be checked (minimal expected in this dataset).

- Duplicate records will be identified and removed.

- Categorical labels (e.g., region names, category names) will be standardized.

- Date fields will be converted to proper date formats.

- Extreme discount and profit values will be verified to ensure they are not data errors.

- This cleaning process will ensure the dataset is accurate, consistent, and ready for reliable analysis.

**Analysis Methods**

A combination of exploratory and analytical techniques will be applied to identify sales patterns, profit trends, and business challenges:

Time Series Analysis

- Monthly and yearly trends will be analyzed to identify seasonality and growth patterns.

- Helps understand which time periods drive higher sales and profit.

Correlation Analysis

- Relationships such as:

  - Discount vs Profit

  - Sales vs Quantity

- This analysis will help determine whether discounting strategies lead to financial losses.

Category & Sub-category Performance Analysis

- The most profitable and least profitable product groups will be identified.

- This will help highlight loss-making segments requiring pricing or stocking review.

Region-wise and Segment-wise Analysis

- Sales and profit across the four US regions will be compared.

- Target customer groups contributing the most to revenue will be identified.

Shipping Mode Analysis

- Cost impact and delay patterns across Standard, First Class, Second Class, and Same-Day shipping modes will be studied.

- This will help to identify high-cost or inefficient logistics options.

Descriptive Statistics

- Mean, median, variance, and distribution plots will be used to summarize customer and product behavior.

This combination of techniques will ensure a comprehensive understanding of the factors affecting

profitability.

**Tools Used**

Tableau

- Will be used for building dashboards and interactive visualizations.
- Will help in analyzing category performance, regional trends, and discount-profit relationships.

Excel

- Will be used for initial data viewing, sorting, and basic cleaning operations.
- Pivot tables will be used for quick exploratory summaries.

Python

- Libraries: Pandas, Matplotlib, Seaborn.
- Will be used for correlation heatmaps, trend plots, and deeper exploratory analysis if required.
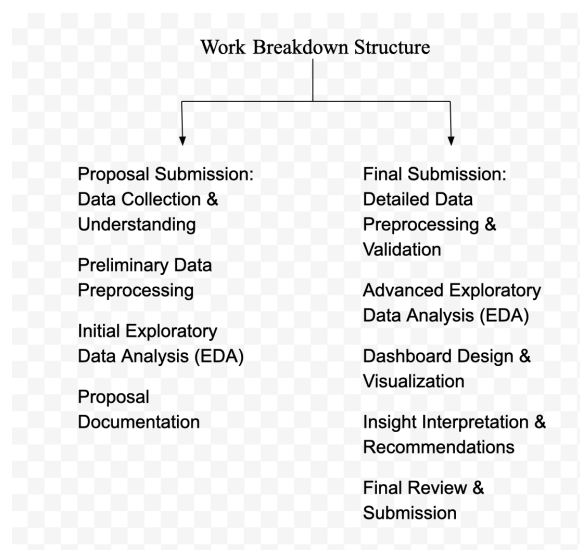
These tools collectively support efficient data preparation, exploration, visualization, and decision-making.

Ref:

1. https://upmetrics.co/blog/4-proven-techniques-for-effective-business-problem-solving
2. https://www.tycoonstory.com/7-steps-to-solve-business-problems-effectively/
3. https://online.purdue.edu/blog/business/problem-solving-techniques-in-business
4. https://www.businessballs.com/problem-solving-and-decision-making/decision-making-and-problem-solving/
5. https://www.ibm.com/garage/method/practices/discover/business-problem-to-ai-data-science-solution/
6. https://www.linkedin.com/pulse/solving-business-problems-data-science-waqas-ahmed-awan/

# 6. Expected Timeline

6.1. Work Breakdown Structure:

Ref:

1. https://acqnotes.com/acqnote/careerfields/work-breakdown-structure

2. https://www.wrike.com/project-management-guide/faq/what-is-work-breakdown-structure-in-project-management/
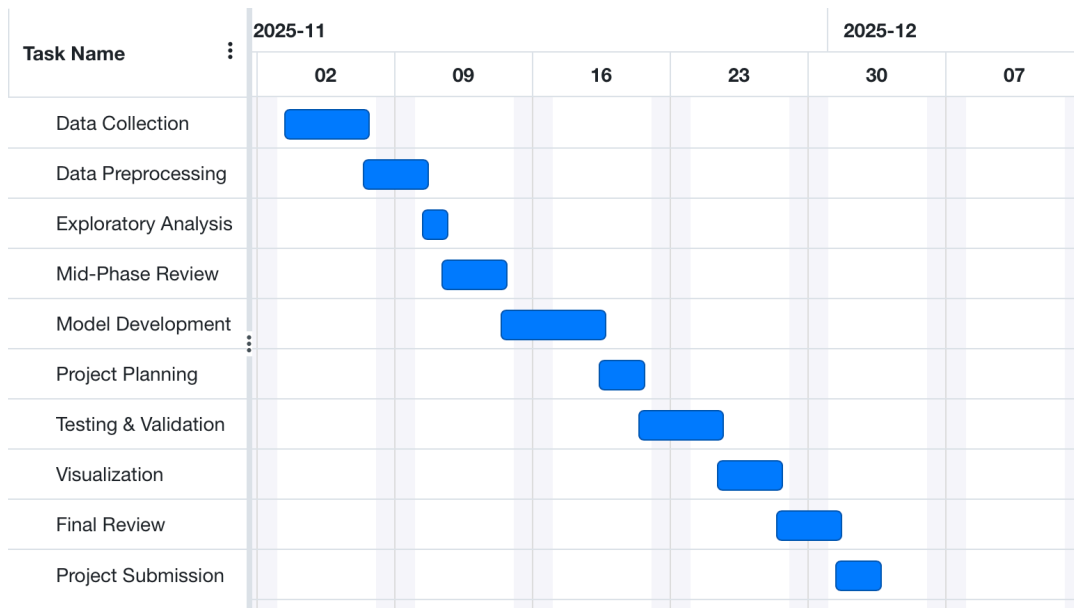
6.2.  Gantt chart



*Figure 1 Expected timeline for completion of project*

# 7. Expected Outcome

7.1 Identification of high-profit and low-profit product categories.

7.2 Insights into discount strategies and their relation with profit margins.

7.3 Evaluation of regional and segment-wise performance for better marketing focus.

7.4 Improving inventory management, discount policies, and logistics efficiency.

7.5 Data-driven suggestions for expanding strong-performing product lines and reducing losses in underperforming segments.