

# AI-Powered Solution for Improving E-Commerce Conversion Rates

## Introduction

This report merges the Product Club Case Study and Use of AI Tools research to propose an AI-driven approach that addresses declining e-commerce conversion rates. By combining AI technology with user experience insights, we aim to deliver solutions that are efficient, ethical, and impactful.

## Problem Statement

A 10% drop in search-to-cart conversions has been observed over the last 4 weeks. This indicates a gap between user expectations and the platform's delivery system. Identified issues include:

Incorrect product tagging

- Out-of-stock items not updated
- Missing MRP or unclear visuals
- Lack of user feedback options
- Seasonal demand variation

## AI-Based Root Cause Analysis

AI Technique	Purpose	Example Use Case
NLP (BERT/GPT)	Understand user intent	Match search with true product need
Recommendation Engine	Suggest products	Display alternatives to unavailable items
ML Prediction Models	Identify drop-offs	Analyze cart abandonment
Sentiment Analysis	Detect dissatisfaction	Extract trends from reviews

## User Personas Affected

Persona	Age	Need	Pain Point
Fast Browser	18?40	Quick search results	Irrelevant results returned
Convenience Seeker	22?40	Reliable access	Frustrated by out-of-stock items
Weekly Planner	35?55	Family shopping	Incomplete orders
Budget Buyer	25?45	Price clarity	Missing MRP details

## Proposed AI Solutions

Solution	Description

# AI-Powered Solution for Improving E-Commerce Conversion Rates

Smart Recommender System	Creates personalized product bundles
Out-of-Stock Predictor	Forecasts restock times using ML
Dynamic MRP Display	Shows real-time price comparisons
AI Chatbot	Collects instant feedback
Predictive Search	Suggests top related items dynamically

Metric	Before AI	After AI (Projected)
Search-to-Cart Conversion	?10%	?10?-12%
Add-to-Cart Actions	Moderate	+10%
User Retention	Baseline	High
NPS (Satisfaction)	65	80+
Search Time	High	Reduced

Member Name	Role / Responsibility
-------------	-----------------------

# AI-Powered Solution for Improving E-Commerce Conversion Rates

Harshita Bohra	Team Lead & Project Coordinator
Tadi Nishith	Techical Analyst
Priyanshu Sharma	Report Writer & Documentation Head
Yashasvi Saini	Design & Visual Creator
Shaurya Agarwal	Presentation & Explanation Lead (PPT Explainer)

## Ethical Considerations for Responsible AI

Principle	Explanation
Privacy & Data Protection	Secure data with transparency and consent
Bias & Fairness	Regular audits to prevent algorithmic bias
Transparency	Explainable AI recommendations
Human-AI Collaboration	AI supports, not replaces humans
Equity & Access	Ensure inclusivity across user segments

## Expected Impact of AI Implementation

### Team Members & Roles

### Conclusion

By integrating AI into core operations, e-commerce businesses can revolutionize user experience and operational efficiency. Through smart recommendations, predictive analytics, and ethical AI use, the proposed solutions aim to rebuild trust and drive growth. The combination of technology, transparency, and empathy ensures that users remain at the center of digital innovation.