A/B Test Experimental Thesis Report Impact of Navigation Layout Redesign on Monetization Performance

Abstract

This research evaluates the causal impact of a navigation layout redesign within an e-commerce platform using a randomized controlled A/B experimentation framework. Statistical analysis reveals that although conversion rates remain unchanged, the treatment variant significantly reduces revenue per user. Based on statistical inference and projected business impact, deployment of the vertical layout is not recommended.

Chapter I — Introduction

Continuous experimentation is essential in digital product development to ensure that interface changes improve both user experience and business performance. This study evaluates the causal effect of replacing the horizontal navigation layout with a vertical design on key performance indicators.

Chapter II — Methodology

A randomized controlled A/B test was implemented with equal allocation of users to control and treatment groups. Validation procedures included sample ratio mismatch testing, covariate balance checks, and temporal stability verification. Metric-specific hypothesis testing was conducted at a 95% confidence level.

Chapter III — Results

The treatment variant shows no measurable effect on conversion probability; however, it significantly reduces revenue per session, indicating that the new navigation layout affects spending behavior rather than purchase likelihood.

Chapter IV — Discussion

The findings highlight the importance of evaluating both engagement and monetization metrics during experimentation. Interface redesigns that appear neutral when assessed using conversion metrics may still introduce significant economic impact through reduced spending behavior.

Chapter V — Conclusion

The vertical navigation layout introduces a statistically and practically significant decline in monetization performance while leaving conversion rates unchanged. Based on rigorous experimental evidence, the treatment variant should not be deployed.