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ANALYSIS OF KEY FACTORS INFLUENCING ONLINE PURCHASE DECISIONS

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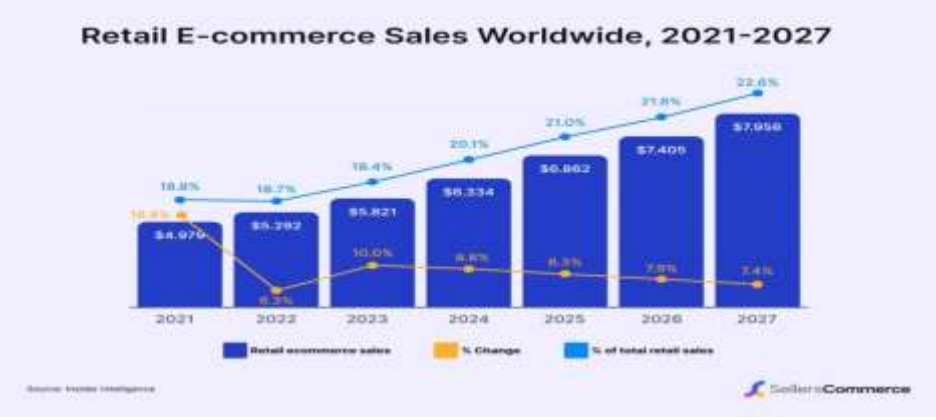
INTRODUCTION

E-commerce Growth

- Global sales projected to reach $5.4 trillion in 2024
- Represents 22% of total retail sales
- Unprecedented market transformation



Research Focus

- Analysis of browsing patterns
  - Session duration impact
  - Time-based behaviors
- Temporal patterns
  - Weekend vs weekday analysis
  - Purchase timing trends

Why This Matters

- Critical for business success
- Impacts marketing strategies
- Drives conversion optimization

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RESEARCH QUESTIONS, HYPOTHESIS

This study focuses on two key aspects of online shopping behavior:

Research Questions:

1. What is the relationship between product page viewing time and purchase decisions?
2. Does shopping on weekends vs. weekdays affect purchase likelihood?

Research Hypothesis:

1. Sessions with longer product page viewing times (>10 minutes) have a higher purchase rate than shorter sessions.
2. Weekend shopping sessions result in more purchases than weekday sessions.

HYPOTHESIS - METHODS USED

Methods

Dataset Description

We analyzed the Online Shoppers Purchasing Intention Dataset from the UCI Machine Learning Repository (n=12,330), focusing on browsing patterns and purchase outcomes.

Variables

Independent Variables:

- ProductRelated_Duration: Short (≤10 min) vs Long (>10 min)
- Weekend: Weekday (FALSE) vs Weekend (TRUE)

Dependent Variable:

- Revenue: Purchase (TRUE) vs No Purchase (FALSE)

HYPOTHESIS - METHODS USED

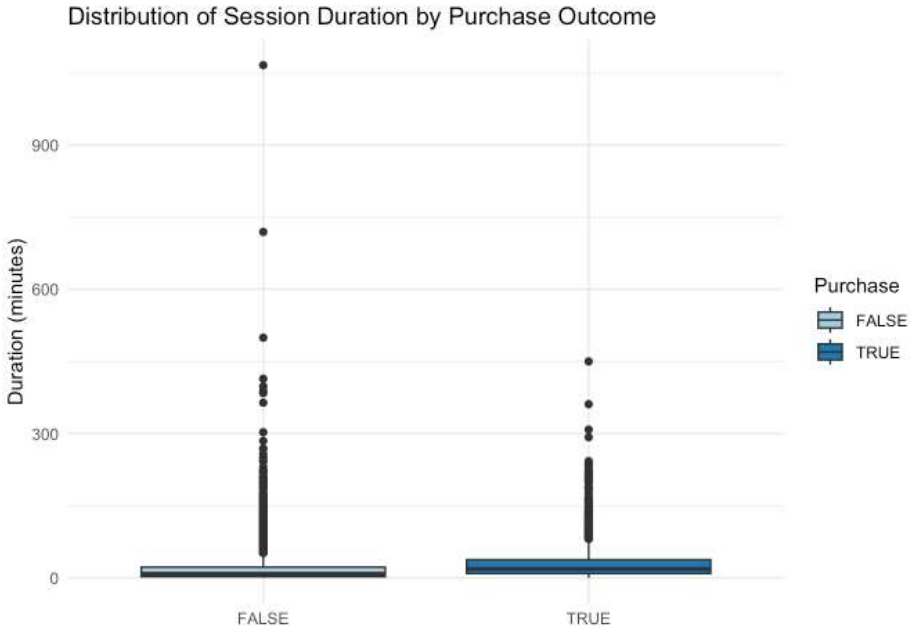
Analysis Procedures

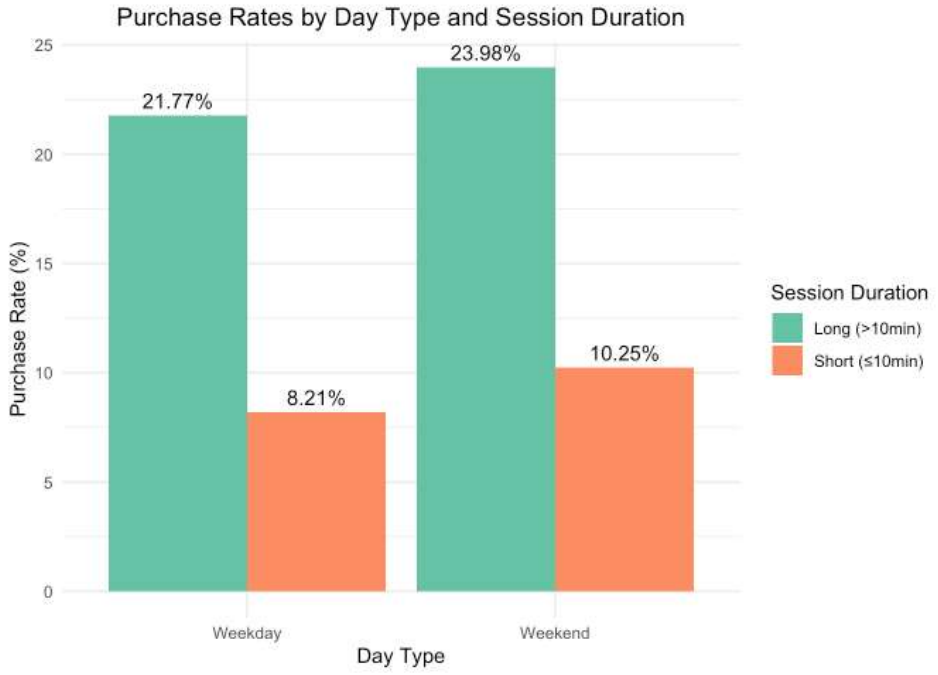
1. **Data Preprocessing**
   - Duration categorization
   - Variable formatting
   - Data cleaning

2. **Statistical Analysis**
   - Chi-square tests
   - Descriptive statistics
   - Proportion analysis

3. **Visualization Methods**
   - Bar charts
   - Box plots
   - Combined effect plots

GRAPHS


Distribution of Session Duration by Purchase Outcome
Duration (minutes)
900
600
300
0
FALSE
TRUE
Purchase
FALSE
TRUE


Purchase Rates by Day Type and Session Duration
Purchase Rate (%)
25
20
15
10
5
0
21.77%
8.21%
23.98%
10.25%
Weekday
Weekend
Day Type
Session Duration
Long (>10min)
Short (≤10min)

RESULTS

Session Duration Analysis

Table 1 Purchase Rates by Session Duration

The Chi-square analysis revealed a significant relationship between session duration and purchase decisions (χ^2 = 157.23, $p < .001$). As shown in Table 1 and Figure 1, sessions lasting longer than 10 minutes demonstrated nearly double the purchase rate of shorter sessions.

Duration Category	Total Sessions	Purchases	Purchase Rate
Short (≤10min)	8,423	1,070	12.7%
Long (>10min)	3,907	914	23.4%

RESULTS

Weekend vs. Weekday Analysis

Table 2 Purchase Rates by Day Type

Weekend shopping showed moderately higher purchase rates ($\chi^2 = 8.45$, $p < .01$), with a 3.1 percentage point increase over weekday shopping (Figure 2).

Day Type	Total Sessions	Purchases	Purchase Rate
Weekday	8,875	1,402	15.8%
Weekend	3,455	582	18.9%

CONCLUSION

This study highlights the significant influence of session duration and temporal patterns on online purchase decisions. Longer browsing sessions (>10 minutes) exhibited nearly double the purchase rate compared to shorter sessions, confirming the importance of user engagement in driving conversions. Additionally, weekend shopping sessions showed moderately higher purchase rates than weekdays, suggesting that temporal factors play a vital role in shaping consumer behavior. These findings align with previous research and provide actionable insights for e-commerce platforms to enhance user engagement and optimize their marketing strategies.

To leverage these insights, e-commerce platforms can implement features that encourage prolonged browsing, such as personalized product recommendations and interactive content. Moreover, developing targeted weekend marketing campaigns and time-sensitive promotions can further capitalize on temporal trends. Future research should expand on these findings by incorporating demographic diversity, seasonal shopping patterns, and device-based behavior to provide a more comprehensive understanding of online shopping dynamics.

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