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# **Behavioral Biases in Inventory Planning: An Empirical Study of Indian Retail Supply Chain Managers**

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**ABSTRACT:** This study explores the influence of behavioral biases on inventory planning among supply chain professionals in Indian retail. Using a mixed-methods approach with 102 survey responses and 12 expert interviews, the research identifies significant impacts of overconfidence, anchoring, availability heuristics, and loss aversion on decision-making. Results reveal systemic inefficiencies and recommend training, decision support systems, and behavioral nudges to improve inventory management.

**KEYWORDS:** behavioral biases, inventory planning, supply chain, overconfidence, anchoring, heuristics, India

## **I. INTRODUCTION**

Inventory planning plays a central role in supply chain performance. Despite the increasing use of ERP systems and data analytics, decision-making in retail inventory is still vulnerable to human judgment errors, often shaped by cognitive biases. This paper investigates how behavioral factors skew inventory decisions in Indian retail sectors, emphasizing the need for behavioral awareness in supply chain operations.

## **II. LITERATURE REVIEW**

Studies in behavioral economics (Tversky & Kahneman, 1974; Croson et al., 2013) highlight systematic biases such as:

- Overconfidence Bias: Overestimation of forecasting abilities.
- Anchoring Bias: Reliance on historical data regardless of current trends.
- Availability Heuristic: Decisions influenced by recent or memorable events.
- Loss Aversion: Overreaction to the fear of stock-outs, leading to overstocking.

Indian-specific studies (e.g., Kumar & Mehta, 2022) have begun to uncover the relevance of these biases in supply chain contexts, particularly in rapidly evolving markets like FMCG and e-commerce.

## **III. RESEARCH OBJECTIVES**

- Identify prevalent behavioral biases in Indian retail inventory planning.
- Examine their impact on key metrics like stock-outs and holding costs.
- Investigate the role of ERP tools and organizational culture in mitigating bias.
- Propose strategies to improve decision-making quality.

## **IV. METHODOLOGY**

A mixed-methods design was adopted.

### **4.1 Quantitative Survey**

- Sample size: 102 professionals (FMCG, e-commerce, electronics, fashion)
- Tool: Structured questionnaire on Likert scales

- Distribution: Online via LinkedIn and professional networks

#### 4.2 Qualitative Interviews

- Sample: 12 mid-to-senior supply chain managers
- Mode: Virtual (Zoom/Meet), recorded with consent
- Focus: Bias recognition, ERP usage, planning habits

#### 4.3 Analysis Techniques

- Descriptive statistics
- Correlation and regression (SPSS)
- Thematic analysis for qualitative responses

### **V. RESULTS AND ANALYSIS**

#### 5.1 Demographics

- 72% male; 60% aged 30–45
- Sectors: 42% FMCG, 28% e-commerce
- 84% used ERP systems

#### 5.2 Bias Prevalence

- Overconfidence: 63% relied more on personal judgment than system outputs.
- Anchoring: 57% used outdated order quantities.
- Availability heuristic: 69% reacted to recent trends over long-term data.
- Loss aversion: 76% overstocked under uncertainty.

#### 5.3 Statistical Findings

- Overconfidence ↔ Overstocking:  $r = 0.61$
- Anchoring ↔ Reorder inefficiency:  $r = 0.58$
- Availability heuristic ↔ Forecast errors:  $\beta = 0.49$  ( $p < 0.01$ )
- Loss aversion ↔ Excess stock:  $r = 0.65$
- ERP moderation effect: Reduced error by 18% in experienced users

### **VI. DISCUSSION**

Biases significantly impair inventory decisions, even with system support. ERP tools are often overridden, particularly under pressure or uncertainty. Organizational culture, training, and regular review processes help mitigate bias impact.

### **VII. RECOMMENDATIONS**

- Training on Bias Awareness: Periodic workshops to expose cognitive pitfalls.
- ERP Integration Policies: Enforce usage reviews and override logs.
- Behavioral Nudges: UI framing within ERP (e.g., cost of overstocking).
- Standardized Checklists: Reduce reliance on memory and intuition.
- Data Visualization: Tools to highlight deviations and prompt reassessment.

### **VIII. LIMITATIONS**

- Urban-centric sample limits rural insights.
- Cross-sectional design doesn't track bias evolution.
- Tool maturity (ERP sophistication) not fully evaluated.
- Self-reported bias recognition may suffer from social desirability.



#### IX. CONCLUSION

Behavioral biases, though inherent to human decision-making, can be recognized and managed. This study demonstrates their tangible impact on inventory outcomes in Indian retail and offers actionable interventions. Firms must blend technology with behavioral insights to achieve efficient, resilient supply chains.

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