Hybrid Commerce: A Multidimensional Framework for Phygital Retail Integration and Its Impact on Consumer Behaviour and Operational Efficiency

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Abstract

The contemporary retail ecosystem has evolved beyond the binary distinction between online and offline channels toward an integrated model known as hybrid or phygital commerce. This study develops and empirically anchors a multidimensional framework explaining how digital–physical integration influences consumer behaviour and operational efficiency. The research integrates the Unified Theory of Acceptance and Use of Technology (UTAUT), the Technology–Organization–Environment (TOE) framework, Diffusion of Innovations theory, and Service-Dominant Logic to conceptualize hybrid commerce adoption and outcomes.

An explanatory sequential mixed-method design was employed, combining a structured consumer survey (n = 214), multiple case studies of leading global retailers, and secondary industry data. Quantitative analysis was conducted using correlation and regression techniques, while qualitative case insights were thematically analysed.

Findings indicate that digital integration significantly predicts perceived convenience, trust, and operational efficiency. Models such as Buy Online, Pick Up In-Store (BOPIS) and Research Online, Purchase Offline (ROPO) demonstrate strong behavioural and profitability linkages when supported by unified data systems. The study proposes the Hybrid Commerce Integration Framework (HCIF), extending omnichannel theory toward contextually intelligent retail ecosystems.

Keywords: Hybrid Commerce, Phygital Retail, Omnichannel Strategy, BOPIS, ROPO, Consumer Behaviour, Operational Efficiency, Retail Technology

1. Introduction

Retail transformation in the twenty-first century has progressed from single-channel physical retailing to multichannel and subsequently omnichannel strategies. However, coordination among channels does not fully explain the structural integration currently defining global retail ecosystems.

Hybrid commerce represents a deeper synthesis in which digital and physical retail environments operate as an integrated system rather than parallel channels. Consumers today expect seamless transitions between browsing online, engaging in-store, and completing transactions through multiple touchpoints. The retail experience has therefore shifted from channel-based competition to ecosystem-based integration.

Despite growing practitioner attention, academic research on hybrid commerce remains fragmented. Existing studies often lack theoretical grounding, empirical validation, and structured frameworks linking consumer adoption with operational performance. This study addresses these gaps by developing a theory-driven and empirically supported model of hybrid retail integration.

The research objectives are:

1. To integrate established theoretical frameworks into hybrid commerce research.
2. To examine the relationship between digital integration and consumer behaviour.
3. To analyse the operational implications of hybrid retail strategies.
4. To propose a conceptual framework explaining hybrid commerce performance outcomes.

2. Theoretical Foundation

2.1 Technology Adoption Perspective

The Unified Theory of Acceptance and Use of Technology explain consumer adoption of technological systems through performance expectancy, effort expectancy, social influence, and facilitating conditions.

In hybrid commerce contexts:

- BOPIS aligns with performance expectancy due to immediacy and cost savings.
- Progressive Web Apps enhance effort expectancy by improving usability.
- Social commerce influences social influence dynamics.
- Integrated infrastructure reflects facilitating conditions.

These constructs provide a behavioural explanation for hybrid model adoption.

2.2 Organizational Adoption Perspective

The Technology–Organization–Environment Framework explains firm-level innovation adoption through technological readiness, organizational capability, and environmental pressure.

Retailers such as Walmart and IKEA illustrate TOE alignment by investing in centralized data systems, distributed inventory networks, and store-as-fulfilment models.

2.3 Innovation Diffusion

The Diffusion of Innovations clarifies how hybrid retail innovations diffuse across consumer segments. Early adopters, particularly urban and digitally literate consumers, accelerate hybrid model normalization.

2.4 Service-Dominant Logic

Service-Dominant Logic reframes hybrid commerce as value co-creation. Consumers actively participate in fulfilment (e.g., BOPIS pickup), information search (ROPO), and post-purchase engagement, transforming retail from transactional exchange to relational ecosystem.

3. Conceptual Framework: Hybrid Commerce Integration Framework (HCIF)

This study proposes the Hybrid Commerce Integration Framework (HCIF), which posits:

Digital Integration → Consumer Behaviour Drivers → Operational Efficiency → Customer Satisfaction & Loyalty

Key Constructs:

Digital Integration

- Unified inventory visibility
- Cross-channel data synchronization

- Mobile-enabled engagement

Consumer Behaviour Drivers

- Perceived convenience
- Trust
- Immediacy
- Experiential value

Operational Outcomes

- Inventory optimization
- Higher order rate
- Reduced fulfilment cost
- Increased customer lifetime value

The framework integrates UTAUT at the consumer level and TOE at the organizational level, bridged through Service-Dominant Logic.

4. Methodology

4.1 Research Design

An explanatory sequential mixed-method design was adopted.

4.2 Quantitative Component

- Sample size: 214 urban retail consumers
- Location: Bengaluru metropolitan region
- Sampling method: Convenience and snowball sampling
- Instrument: Structured questionnaire (5-point Likert scale)
- Reliability: Cronbach's Alpha = 0.82
- Statistical tools: Correlation and multiple regression analysis

4.3 Qualitative Component

Multiple case study analysis was conducted on:

- Walmart
- IKEA
- Nordstrom
- Sephora

Selection criteria included omnichannel maturity, public financial transparency, and documented digital investments. Thematic analysis was applied to synthesize patterns.

5. Results and Analysis

5.1 Quantitative Findings

Regression analysis indicates:

- Digital integration significantly predicts perceived convenience ($\beta = 0.62$, $p < 0.01$).
- Digital integration significantly predicts operational efficiency ($\beta = 0.54$, $p < 0.01$).
- Perceived convenience mediates the relationship between integration and purchase frequency.

These findings validate UTAUT constructs within hybrid commerce settings.

5.2 BOPIS Performance Drivers

Buy Online, Pick Up In-Store improves:

- Basket size through incremental in-store purchases
- Last-mile cost efficiency
- Inventory turnover

Its success is linked to performance expectancy and immediacy.

5.3 ROPO Behavioural Implications

ROPO reflects trust formation and risk reduction. Digital research enhances decision confidence before physical purchase, demonstrating value co-creation under Service-Dominant Logic.

5.4 Progressive Web Apps as Enablers

Progressive Web Apps improve:

- Effort expectancy
- Cross-device continuity
- Push-based engagement

They operationalize UTAUT constructs technologically and enhance facilitating conditions.

6. Managerial Implications

For Retail Managers:

- Invest in integrated ERP and CRM platforms.
- Align channel KPIs toward unified customer lifetime value.
- Redesign stores as experiential and fulfilment hubs.

For Supply Chain Strategists:

- Implement distributed inventory systems.
- Leverage predictive analytics for demand forecasting.

For Policymakers:

- Encourage SME digital integration.
- Strengthen digital infrastructure ecosystems.

7. Theoretical Contributions

This study contributes to literature by:

1. Proposing the Hybrid Commerce Integration Framework (HCIF).
2. Integrating UTAUT and TOE within a retail performance model.
3. Empirically validating digital integration–efficiency linkages.
4. Extending omnichannel research toward contextually intelligent commerce.

8. Limitations and Future Research

Limitations include:

- Urban-centric sampling
- Cross-sectional design
- Dependence on secondary case data

Future research may employ structural equation modeling, longitudinal designs, and cross-country comparisons to test HCIF robustness.

9. Conclusion

Hybrid commerce represents structural retail transformation rather than mere channel coordination. The HCIF demonstrates that digital integration influences behavioural and operational outcomes through theoretically grounded mechanisms.

Retail competitiveness in the coming decade will depend on contextual intelligence, unified data systems, and predictive personalization capabilities. The future of retail is neither online nor offline—it is integrated, adaptive, and customer-centric.

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