

# Maximising Profit in Online Grocery Retail: The Strategic Role of Efficiency, Technology, and Customer Engagement

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## Abstract

The online grocery retail sector has expanded rapidly, driven by digital adoption, changing consumer behaviour, and new supply chain models. However, maintaining profitability in this highly competitive, low-margin market remains difficult. This study presents a framework where operational efficiency, technology integration, and customer loyalty serve as strategic drivers of long-term performance. Based on Ajzen's Theory of Planned Behaviour and the Theory of Reasoned Action, it investigates how consumer attitudes and purchase intentions interact with firm capabilities to influence repeat purchasing and customer retention. Improving inventory management, automation, and last-mile logistics lowers costs and enhances accuracy, while AI-driven analytics and real-time platforms enable predictive demand, personalisation, and scalable services. Loyalty is seen not only as rewards but also as outcomes of convenience, satisfaction, and value, reinforced through seamless experiences and proactive engagement. Profitability results from the combined effect of these elements rather than from isolated improvements. Future research should compare different markets, evaluate AI adoption, and explore moderating factors such as resilience and sustainability. The framework provides academics and practitioners with a structured approach to leveraging operations, technology, and loyalty to achieve sustainable profitability in online grocery retail.

**Keywords:** Online grocery retail, Operational efficiency, Technology integration, Customer loyalty, Sustained profitability, Digital retail strategy

## 1. Introduction

No industry is untouched by e-commerce, where entrepreneurs continue to uncover opportunities, solve problems, and reshape markets. Among retail disruptions, e-commerce stands as the most profound. In 2007, Apple's iPhone gave Amazon and others the mobile platform that accelerated the decline of brick-and-mortar stores. Consumer choice expanded dramatically—from just six blue-jean brands in 1980 to 800 by 2010—shifting power from manufacturers and retailers to consumers themselves.

Amazon pioneered next-day delivery, while the “retail apocalypse” saw 9,300 stores close in 2019 due to over-leveraging and weak capitalisation (Peterson, 2019). Zara exemplified fast fashion, using supply chain innovations to keep fresh inventory flowing to thousands of outlets, driving immediate purchases and underscoring the importance of inventory management for online delivery. This principle applies equally to e-grocery and food delivery services.

As Jacob Lindsey (2020) noted, traditional retail has struggled to adapt to new distribution channels, creating openings for e-commerce. The future of e-grocery depends on the economics of delivery, supported by omni-channel strategies, consolidation, and reimagined physical stores. Multichannel shopping has evolved into true omni-channel experiences, with features like Click-and-Collect, persistent baskets, wish lists, and in-store virtual catalogues (Aithal & Saldanha, 2025).

### 1.1. Nature and Characteristics of the Online Grocery Business

Online grocery retail is a low-margin business with significant potential, yet survival remains difficult. Success in e-grocery is often seen as a benchmark for broader e-commerce models, given that groceries account for the largest and most consistent share of household spending. The challenge lies in building sustainable businesses that do not depend indefinitely on venture capital (Haneefa & Singh, 2025).

The rise of online grocery shopping is reshaping competition between national brands and private labels. While national brands once drove traffic, private labels are gaining share and delivering stronger margins. Market dynamics vary: Germany and the Netherlands face lower margins and higher costs compared to the UK. Early challenges such as low value-to-bulk ratios, handling perishables, packaging, and pricing were significant in 2005–06, but many have since been addressed (Truden et al., 2022).

Research into e-grocery has accelerated only recently, leaving ample scope to explore issues such as supply chain resilience, consumer behaviour, and profitability models that will shape the future of the sector (Seghezzi et al., 2023).

### 1.2. The Growth and Transformation of the Indian E-Grocery Sector

India's e-grocery industry has grown at an extraordinary pace, expanding from USD 4.8 billion in 2023 (Economic Times, 15 Mar 2024) to an estimated USD 9.5 billion in 2026. This surge is fueled by deeper urban penetration, rising smartphone adoption, and

widespread digital literacy. Consumers increasingly prioritise value, convenience, and choice, with quality and savings outweighing speed alone.

E-grocery firms are responding by optimising assortments, flexible delivery slots, and engagement strategies. Technology drives this transformation: AI-powered shelf monitoring, direct farmer sourcing, predictive demand sensing, and real-time inventory systems help balance cost and quality. A strong digital presence—interactive apps, social media, and omni-channel engagement—has become indispensable.

Quick commerce platforms have intensified competition. Big Basket's Supersaver now promises 90-minute delivery with SKU capacity expanded from 10,000 to 30,000. Flipkart has scaled same-day delivery to 40 cities, while Reliance JioMart Express leverages 25 lakh kiranas for hyperlocal fulfilment. Swiggy Instamart has adopted electric fleets for bulk deliveries, improving unit economics.

Looking ahead, the sector is data-driven and personalised. Advanced analytics, AI, and machine learning power demand forecasting, assortment planning, and tailored promotions. Global benchmarks such as Ocado and Kroger showcase high-tech fulfilment centres, blockchain-enabled supply chains, and IoT-connected retail ecosystems. Subscription models and curated dietary offerings further reinforce loyalty.

Challenges remain—perishable management, cold-chain logistics, inventory accuracy, and cost optimisation—but predictive analytics and strategic technology adoption are critical. The industry's evolution reflects a fusion of digital and physical retail, where personalisation, convenience, and operational excellence drive profitability. Importantly, first-time experiences remain decisive: nearly 75% of online grocery shoppers stay loyal to the first retailer they try (Economic Times, 15 Mar 2024).

### 1.3. Barriers to Online Grocery Adoption

Despite the growing popularity of online grocery shopping, several barriers continue to hinder consumer adoption and limit market penetration. Unlike many other forms of e-commerce, grocery purchases involve products that are perishable, frequently purchased, and often assessed through sensory evaluation, making consumers particularly sensitive to issues of quality and reliability.

One of the most frequently cited barriers is concern regarding product quality and freshness. Consumers are often reluctant to purchase fresh produce, dairy products, and other perishable items online because they are unable to physically inspect products before purchase. Sahin (2022) found that uncertainty surrounding freshness, quantity assessment, and limited sensory information were among the most significant sources of consumer dissatisfaction in online grocery shopping. Similar concerns have been reported across emerging and developed markets, highlighting the distinctive challenges faced by e-grocery retailers.

Delivery reliability represents another critical obstacle. Since grocery purchases are often tied to immediate household needs, delayed deliveries, missing items, or inaccurate orders can significantly reduce consumer trust. Kumar et al. (2023) identified delivery failures, inefficient refund processes, and inadequate customer support as major drivers

of dissatisfaction among e-grocery users. Consistent and reliable fulfilment is therefore essential for sustaining consumer confidence.

Security and privacy concerns also influence adoption decisions. Consumers may hesitate to share personal and financial information online, particularly when using unfamiliar platforms. Although findings regarding the importance of security concerns are mixed, apprehensions surrounding data protection and digital payments remain relevant, especially among first-time users.

Finally, technological limitations can restrict adoption. Kaur and Shukla (2016) found that poor internet connectivity and technical difficulties negatively affected consumers' willingness to shop online. In markets characterised by varying levels of digital literacy and infrastructure, user-friendly platform design and seamless technological performance remain fundamental requirements for broader adoption.

## 2. Literature Review

### 2.1 Review of Previous Work

India is emerging as a rising online retail giant, with the grocery market valued at USD 365 billion. Rapid urbanisation, high population density, low labour costs, and booming smartphone ownership are key drivers, while a youthful, tech-savvy population (65% under 35) accelerates digital adoption. The COVID pandemic further boosted e-grocery uptake (Kumar, 2023).

Tier-II cities are now central to growth, driven by rising incomes, dual-working households, and busy lifestyles. Offline expansion is constrained by soaring land prices and long queues, while 14 million kirana shops in 2023 have steadily declined as online grocery gains traction. Successful expansion requires efficient logistics, localised assortments, and region-specific digital marketing (Dey, 2023).

Competition has intensified. The battle is now between Zepto, Swiggy Instamart, and Blinkit, which dominate quick commerce with speed and aggressive pricing. Jiomart leverages Reliance's retail network and millions of kiranas to strengthen hyperlocal delivery, while Dmart continues to thrive with its low-cost, efficiency-driven offline-plus-online model. Big Basket, once the pioneer, has lost momentum, struggling to differentiate in a crowded market.

E-grocers face the challenge of building sustainable businesses without over-reliance on venture capital. Price-sensitive, vendor-agnostic consumers switch easily between platforms, making differentiation through assortment, service quality, and trust essential (Azhar & Bashir, 2018). Transparent pricing intensifies competition, while product availability and delivery efficiency remain decisive. Logistics and promotions account for nearly 20% of costs, making Gross Merchandise Value (GMV) a critical performance metric (Trejo-Pech, 2024).

Trust and loyalty hinge on seamless ordering, intuitive design, accurate fulfilment, and secure payments. Personalisation, empathy, and convenience further strengthen customer relationships (Sreeram et al., 2017; Bruggemann et al., 2025).

Global benchmarks highlight best practices: Tesco integrates robotics and hybrid delivery, while Ocado relies on centralised fulfilment, automation, and proprietary software to reduce costs and enhance accuracy (Mukherjee, 2023; Ganapathy et al., 2025). These models underscore the importance of technology, efficiency, and customer-centricity in sustaining profitability.

## 2.2 Thematic Mapping: Customer Loyalty in E-Grocery Retail

Customer loyalty is the cornerstone of sustainable growth in retail, as it reduces acquisition costs, drives repeat purchases, and boosts profitability. It can be understood through both behavioural loyalty, where customers repurchase out of habit without strong emotional attachment, and attitudinal loyalty, where genuine preference and commitment drive repeat buying. According to Dick and Basu's Attitude–Behaviour Loyalty Model, true loyalty arises when favourable attitudes align with consistent repeat behaviour, while low switching costs intensify competition based purely on price.

The Wheel of Loyalty illustrates how loyalty must be systematically managed through segmentation, tiered service levels, service recovery, and the creation of loyalty bonds that reduce churn. Programs such as tiered memberships, loyalty points, and personalisation reinforce engagement, leading to revenue growth, stronger word-of-mouth, enhanced brand visibility, and higher Net Promoter Scores.

Oliver's Four-Stage Loyalty Model introduces a temporal dimension, starting with cognitive loyalty based on rational value judgments, progressing to affective loyalty through emotional satisfaction, conative loyalty through repurchase intention, and ultimately, action loyalty, where commitment persists despite competitive offers. E-grocery firms must deliberately guide customers through these stages to build durable loyalty.

In the modern e-grocery landscape, loyalty is increasingly transactional and technologically mediated. Tools such as RFM scoring, AI-driven recommender systems, chatbots, natural language processing, and sentiment analysis enable hyper-personalised campaigns, instant gratification, and seamless service recovery. Unlike traditional kirana shopping, where loyalty was incidental, online grocery requires deliberate strategies to foster genuine preference.

Sustainable loyalty emerges from the integration of behavioural insights, structured programs, and advanced technology. When managed effectively, loyalty transforms customers into advocates, encouraging repurchase, strengthening brand visibility, and securing long-term profitability in the competitive e-grocery sector.

### 2.2.1 Customer Loyalty Patterns and the Law of Double Jeopardy

Graham et al (2017) investigated the Law of Double Jeopardy, which suggests that smaller brands suffer from both fewer buyers and lower purchase frequency. The study tests its applicability across various markets, including emerging markets, long-term buying patterns, and capital goods. The findings confirm that the law holds consistently across different contexts, including Egypt's chocolate market and continuous buying data for

shampoo. The research highlights the importance of customer acquisition over loyalty programs in driving growth and brand performance.

The Law of Double Jeopardy, a well-established concept in marketing, posits that smaller brands face two significant disadvantages compared to larger ones: fewer buyers and lower purchase frequency (Bongers & Hofmeyr, 2010). This principle can be directly applied to quick commerce grocery delivery services, which often experience challenges similar to those faced by smaller brands. In the context of quick commerce, which focuses on delivering groceries within very short timeframes, brands with smaller customer bases typically struggle with both acquiring new customers and ensuring repeat business. As demand for faster deliveries increases, these services often find themselves in a competitive race with larger, more established grocery delivery providers who benefit from greater brand recognition and higher consumer loyalty. Smaller quick commerce brands, therefore, are more likely to experience both fewer customers ordering from their platforms and lower frequencies of purchase, amplifying the negative effects of the Law of Double Jeopardy (Graham et al., 2017).

Moreover, as the competition in the quick commerce grocery sector intensifies, the Law of Double Jeopardy highlights the importance of scaling customer acquisition efforts. Smaller brands face difficulties in expanding their customer bases, leading to a cycle where their limited number of buyers impacts their ability to achieve high purchase frequency. This is particularly evident in quick commerce, where companies often rely on high volumes of repeat customers to sustain profitability. Smaller services may find it more difficult to entice customers away from larger, more well-established competitors due to their smaller market share and lower levels of brand loyalty. Research suggests that smaller brands can mitigate the effects of Double Jeopardy by focusing on strategies such as customer engagement, personalised services, and delivering superior customer experiences, which can help in increasing both customer retention and frequency of purchases. By adopting such strategies, quick commerce services might break the cycle of low customer acquisition and low purchase frequency, thus reducing the negative impacts of the Law of Double Jeopardy.

To achieve success in the quick commerce grocery delivery sector, smaller brands must leverage strategies that counteract the Law of Double Jeopardy. One critical approach is to focus on improving brand recognition and increasing customer reach through targeted marketing efforts. By investing in digital marketing, such as social media campaigns and influencer partnerships, smaller quick commerce brands can increase their visibility and attract a larger, more diverse customer base. Additionally, offering incentives such as discounts for first-time users or loyalty rewards for repeat customers can help foster customer retention, which is crucial for mitigating low purchase frequency. As noted by Sharp (2010), even smaller brands can overcome the negative effects of Double Jeopardy by enhancing their brand's presence and creating a compelling reason for customers to keep coming back. With increased visibility and customer acquisition efforts, smaller services can expand their market share, reducing the gap between them and their larger competitors.

Moreover, improving customer experience is another key strategy to combat the effects of Double Jeopardy in quick commerce. Since the Law of Double Jeopardy

suggests that smaller brands struggle with repeat purchases, offering a superior customer experience can help encourage loyalty and increase purchase frequency. Quick commerce services can focus on personalised offerings, ensuring that customers feel valued and appreciated. This could include personalised shopping suggestions based on previous orders, ensuring fast and accurate deliveries, and providing excellent customer service through multiple communication channels. As highlighted by East et al (2017), a focus on customer satisfaction and service excellence helps build strong brand loyalty, which in turn increases both purchase frequency and customer retention. By implementing such strategies, smaller quick commerce brands can not only reduce the negative impacts of the Law of Double Jeopardy but also position themselves as competitive players in the rapidly growing grocery delivery market.

### COMPARATIVE LOYALTY FRAMEWORKS IN RETAIL/E-GROCERY

| Framework                 | Core Idea                                                                                | Key Components                                                                                                                               | Application in E-Grocery                                                                                                                                                                                      |
|---------------------------|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wheel of Loyalty          | Loyalty must be systematically managed through structured retention strategies.          | Customer segmentation, tiered service levels, service recovery, creation of loyalty bonds, and churn reduction.                              | Tiered memberships (Silver, Gold, Platinum), loyalty points, personalised offers, and service recovery programs to reduce churn and strengthen repeat engagement.                                             |
| Dick & Basu Model         | Loyalty emerges when favourable attitudes align with consistent repeat behaviour.        | Attitudinal loyalty (emotional preference) + behavioural loyalty (habitual repurchase). Switching costs influence competitive pressure.      | Differentiation through assortment, trust, and service quality to convert transactional behaviour into attitudinal loyalty, especially in a low-switching-cost environment.                                   |
| Oliver's Four-Stage Model | Loyalty develops progressively across cognitive, affective, conative, and action stages. | Cognitive (value belief), affective (emotional satisfaction), conative (repurchase intention), and action (commitment despite alternatives). | E-grocers must guide customers from rational value perception (pricing, assortment) to emotional satisfaction, then to repurchase intention and finally to committed loyalty that resists competitive offers. |

Source: Author

## 2.3 What Factors Can Reduce Customer Loyalty to an E-Grocery Store?

Customer loyalty in e-grocery is fragile due to low switching costs, high price transparency, and operational complexity.

### **2.3.1 Changing Consumer Preferences and Engagement Fatigue**

Consumer preferences in e-grocery are evolving rapidly, and engagement fatigue has become a critical challenge. Customers often lose interest in using the same app repeatedly, seeking novelty, variety, and more immersive experiences such as “shoptainment.” They may experiment with exotic products, combine grocery shopping with non-grocery categories, or switch platforms based on peer recommendations and network effects.

Subscription fatigue further compounds the issue, as customers disengage from renewing services when personalisation is lacking or when shopping experiences feel monotonous. Repetitive interfaces, limited delivery windows, and superior offers from competitors accelerate churn. In this environment, loyalty is fragile, shaped by convenience, pricing, and differentiated experiences rather than habit alone.

To counter these pressures, e-grocery platforms must continuously monitor competitive pricing, enhance personalisation, and deliver timely, relevant offers. Creating engaging, dynamic user experiences—supported by technology, variety, and convenience—is essential to sustain customer interest and prevent attrition in a highly competitive market.

### **2.3.2 Technical Issues and Platform-related Problems**

Technical issues such as website or app downtime, bugs, a poor user interface, doubts about the accuracy of product information, or perceived unethical behaviour by the service provider can drive customers away. Negative reviews, difficulties with returns or exchanges, unavailability of desired SKUs, and concerns about packaging waste can further erode loyalty. High delivery charges, frequent stockouts of popular or local products, and poor customer support are further deterrents.

Shoppers also have numerous alternatives—they can switch to another e-grocery app, visit a physical market, or shop at organised retail stores.

### **2.3.3 Inventory and Fulfilment Failures**

Stockouts result in a bad experience for customers and lost sales, and incomplete fulfilment of orders leads to a bad user experience. Wrong delivery and poor quality of grocery products can lead to loss of customers.

Inventory management and last-mile delivery are key issues, and the right e-grocery inventory model leads to better e-fulfilment, though wastage risk is also high in the inventory model. The distance between warehouses and delivery destinations adds to the delivery costs, making fulfilment efficiency critical (Maassarani et al., 2024).

The solution is to set up smaller warehouses within cities for faster deliveries and reduced costs. Some e-grocers introduced a model wherein orders could be placed during specific times of the day, but deliveries would be made during the later part of the day, allowing multiple deliveries to be clubbed to reduce last-mile delivery costs. Technology is solving the problems of picking and delivery in e-grocery operations. Real-time data on inventory and avoiding stock-out situations is crucial, and integration of delivery and online orders, along with integration of technology and a real-time inventory tracking

system, is crucial for the success of online grocery services. E-grocers who survive will be champions of automation.

### **2.3.4 High Hyperlocal and Quick Commerce Delivery Costs**

Hyperlocal delivery has certain advantages and also certain drawbacks. Margins are low, and 70% of the cost pertains to logistics, so delivery costs are huge. Delivery costs in hyperlocal, on-demand, or quick-commerce (e.g., 10–30-minute) models are generally high per transaction compared to traditional, slower delivery methods. While the distance covered is short, the operational complexity and demand for near-instant fulfilment make it expensive for logistics providers.

Hyperlocal delivery costs are high due to several operational and structural factors. High operational intensity requires a dense network of delivery personnel, often using bikes, which raises labour and maintenance expenses. Low order density, where drivers handle few deliveries at a time, further increases per-delivery costs (Ganapathy V, 2025). The use of dark stores—micro-warehouses—combined with advanced real-time tracking technology adds high overhead and storage costs. Unpredictable demand during rush hours or adverse weather necessitates higher staffing levels, increasing expenses despite potential surge fees.

E-grocery operates on razor-thin margins, with delivery fees rarely covering labour, fuel, and technology costs. Efficiency gains through AI-driven route optimisation, order clubbing, and customer pickup models help reduce expenses. Platforms offset costs via subscriptions (Swiggy One, Blinkit Prime), minimum order thresholds, and surge pricing. Despite high transaction costs, convenience and speed sustain demand, with consumers willing to pay premiums (Guru et al., 2023; Umair, 2026). Quick commerce, once metro-centric, is expanding to Tier-II cities like Vizag, Nagpur, Kochi, Jaipur, and Lucknow. Non-grocery items form 15–20% of orders, with wallet share at 5–6% of grocery spending.

### **2.3.5 Profitability Pressures**

Logistics remains the single largest challenge in e-grocery, accounting for nearly 70% of operating costs, with promotions adding another 20% (Owusu, 2022). Store picking labour and last-mile delivery are the two dominant cost drivers, while property, people, waste, and energy further shape expenses. Rising land prices make offline expansion difficult, and inventory-led models demand high capital investment. Delivery costs often exceed margins, particularly for new customers acquired through discounts, where low order values fail to cover fulfilment charges. Profitability typically emerges only after the fifth or sixth repeat purchase, when average order values increase (Barnett & Alexander, 2004).

Gross Merchandise Value (GMV), calculated as transactions multiplied by average order value, is a key performance metric. Delivery charges are estimated by factoring labour, transportation, distance, order size, weight, urgency, and surge demand (Vazquez-Noguerol et al., 2022; Rodríguez-García et al., 2023). Common pricing models include minimum order thresholds, tiered fees, subscriptions, and surge pricing in quick commerce, where fees may reach \$20–\$50 (Wu et al., 2024).

Customer loyalty is vulnerable to engagement fatigue, technical failures, and high delivery costs. Sustained loyalty, therefore, depends on operational excellence, technological integration, cost efficiency, and continuous customer experience enhancement, positioning e-grocery as the bellwether of internet fulfilment (Owusu, 2022).

## 2.4 Identification of Gap

The Indian grocery market differs fundamentally from Western models, and strategies cannot be blindly transplanted. While kirana stores are steadily declining, many Indian consumers simultaneously use two or three e-grocery apps, making loyalty fragile and difficult to sustain. Grocery buying is a routine, high-frequency activity, and in this context, consumers are often fickle, switching platforms for better deals, convenience, or peer recommendations.

Existing research on loyalty has been largely generic and insufficiently contextualised for India's dynamic market. Engagement fatigue is common, as repetitive interfaces, lack of personalisation, and monotonous shopping experiences reduce stickiness. Subscription fatigue further weakens retention, with customers disengaging when renewal benefits appear limited.

Importantly, a single e-grocery business cannot satisfy the diverse expectations of **Gen X**, **Gen Y**, and **Gen Z** simultaneously. Each cohort values different aspects—price, convenience, speed, or digital engagement—underscoring the need for sharper segmentation strategies. Effective loyalty management in India must therefore move beyond transactional incentives to embrace differentiated experiences, localised assortments, and technology-enabled personalisation. Only by aligning segmentation with consumer diversity can e-grocery firms mitigate fatigue and foster sustainable loyalty in a market where multi-app usage is the norm.

## 3. Methodology

### 3.1 Research Design

This is a conceptual research effort based on available secondary sources of literature. The research objectives are delineated below:

- To investigate how operational efficiency influences profitability in online grocery retail, particularly in contexts characterised by thin margins and high fulfilment costs.
- To examine the role of technology integration—including automation, artificial intelligence, and advanced data analytics—in improving operational performance and optimising costs.
- To assess the impact of customer loyalty on revenue stability and long-term financial sustainability, recognising the challenges of multi-app usage and fickle consumer behaviour in the Indian market.

- To evaluate the combined effect of operational efficiency, technology integration, and customer loyalty as interdependent strategic drivers of sustained profitability in the online grocery sector.

## 4. Results

The study underscores that operational efficiency remains the bedrock of profitability in online grocery retail. In a sector defined by razor-thin margins and high fulfilment costs, improvements in inventory management, warehouse automation, last-mile logistics, and demand forecasting directly reduce expenses and enhance accuracy. Firms that streamline supply chain coordination and minimise delivery inefficiencies are consistently better positioned to sustain financial performance.

Beyond efficiency, technology integration has evolved into a strategic capability rather than a support function. Advanced data analytics, AI-driven demand prediction, and automated fulfilment systems strengthen scalability, cost control, and service reliability. Notably, platforms such as Swiggy Instamart are experimenting with Generative AI and Agentic AI to personalise promotions, simulate demand scenarios, and automate customer interactions. These tools enable hyper-personalised engagement and dynamic decision-making, pushing technology from back-end optimisation into front-end customer experience.

At the same time, customer loyalty remains elusive. Indian consumers often use multiple e-grocery apps, making loyalty fragile and transactional. Grocery shopping is routine, frequent, and shaped by fickle preferences, with Gen X, Y, and Z valuing different aspects of price, convenience, and digital engagement. Understanding consumer behaviour is therefore inscrutable and difficult, requiring sharper segmentation and differentiated strategies.

The findings highlight that profitability is not driven by isolated levers but by the strategic alignment of operational efficiency, technological innovation, and loyalty mechanisms. Firms that integrate these elements cohesively are more likely to achieve sustainable competitive advantage and financial resilience in India's evolving e-grocery ecosystem.

## 5. Discussion

### 5.1 Comparison with Previous Studies

Previous studies have identified multiple factors influencing the success of e-grocery businesses, yet most have examined these constructs in isolation. Sustainability in this sector is not simply the outcome of sales and marketing; it equally depends on supply chain efficiency and the ability to generate profits beyond external funding. Few studies have analysed the combined impact of product and service quality, pricing strategies, delivery costs—including last-mile logistics—and user interface design on customer behaviour.

Loyalty, in particular, is shaped by the synergistic interaction of these elements rather than by any single driver. It must also be understood not only in terms of business benefit but in how loyal customers themselves gain—through convenience, reliability, and trust—compared to non-loyal customers who frequently switch platforms. This study attempts to address these gaps by situating loyalty within a broader profitability framework. However, there remains significant scope for empirical and case-based research with e-grocery firms to deepen understanding of how operational efficiency, technology integration, and customer loyalty interact to sustain long-term performance.

## 5.2 Theoretical and Practical Implications

### *Theoretical Contribution*

This study advances strategic management and digital retail literature by integrating behavioural and operational perspectives to explain sustained profitability in online grocery retail. Building on Ajzen's *Theory of Planned Behaviour* and the *Theory of Reasoned Action*, the findings reaffirm that consumer attitudes, perceived control, and purchase intentions shape repeat buying and loyalty. Yet loyalty in e-grocery is complex: grocery purchases are recurrent, switching costs are low, and consumers often juggle multiple apps, making retention fragile. The study extends theory by positioning loyalty not as a passive behavioural outcome but as a strategic asset that emerges when operational efficiency and technology integration converge. Analytical approaches such as variance analysis and predictive modelling can further validate how these constructs interact to influence profitability across diverse consumer segments.

### *Practical Contribution*

From a managerial standpoint, the results highlight that e-grocery firms must operate at the intersection of operations and technology innovation. Automation, AI-enabled demand forecasting, and real-time analytics enhance cost efficiency and responsiveness, directly impacting margins. Emerging tools such as Generative AI and Agentic AI, already piloted by platforms like Swiggy Instamart, are transforming customer engagement—optimising campaigns, simulating demand, and enabling conversational, adaptive interactions. These technologies push beyond back-end efficiency to front-end personalisation, addressing the challenge of inscrutable and fickle consumer behaviour.

The integration of AI within martech ecosystems—CRM, automation platforms, analytics, and digital advertising—creates seamless omnichannel engagement and data-driven decision-making. However, effective deployment requires aligning tools with strategic objectives to avoid fragmentation and ensure measurable ROI. Collectively, the findings underscore that sustainable profitability in online grocery retail depends on the cohesive alignment of operational excellence, technological capability, and loyalty-driven strategies, especially in markets like India, where consumer behaviour is diverse, dynamic, and difficult to predict.

### 5.3 Limitations

This study is conceptual and does not employ primary empirical data or statistical validation. While it synthesises existing literature to propose a framework linking operational efficiency, technology integration, and customer loyalty to sustained profitability, the absence of empirical testing restricts generalizability. The relationships remain theoretically grounded but unverified across diverse markets, firm sizes, and geographic contexts. Variations in business models, technological maturity, and competitive intensity may yield different outcomes than those suggested here. Consequently, the framework should be viewed as a foundation for further inquiry, requiring empirical studies and case-based validation to strengthen its applicability.

### 5.4 Future Research Directions

This study is conceptual and highlights the need for empirical validation of the proposed framework linking operational efficiency, technology integration, and customer loyalty to sustained profitability. Future research in the Indian context should adopt quantitative, qualitative, and mixed-method approaches—large-scale surveys, case studies, and longitudinal analyses—to measure the strength of these strategic drivers.

Generational differences merit deeper exploration: Gen X values trust and reliability, Gen Y prioritises convenience and affordability, while Gen Z demands personalisation, gamification, and instant gratification. Comparative studies across Tier-I versus Tier-II/III cities could reveal how regional infrastructure, digital adoption, and cultural preferences shape buyer behaviour. Research should also examine how kirana stores decline, and how hybrid offline-online models affect consumer trust and retention.

The competitive re-entry of Amazon and Flipkart into grocery and quick commerce warrants an investigation into how global scale and membership models reshape market dynamics. Similarly, the future trajectory of quick commerce—its expansion beyond metros, impulse-driven demand, and integration of non-grocery categories—requires empirical study.

Other promising areas include: the role of Generative and Agentic AI in personalisation and demand forecasting; supply chain resilience in fragmented logistics; sustainability practices such as eco-friendly packaging; consumer trust in digital platforms regarding data privacy and reliability; and the financial impact of loyalty programs, subscription models, and dynamic pricing. Cross-market comparisons between India and developed economies would further contextualise profitability drivers.

Collectively, these avenues would deepen theoretical understanding and provide actionable insights for practitioners navigating India's evolving e-grocery ecosystem.

## 6. Conclusion

The future of online grocery retail in India will be defined not by rapid expansion or aggressive customer acquisition alone, but by the **strategic integration of operational efficiency, technology innovation, and customer loyalty**. Operational excellence reduces

cost pressures and enhances fulfilment accuracy in a sector where margins are razor-thin. Technology innovation—ranging from AI-enabled demand forecasting to Generative and Agentic AI applications in personalisation and campaign optimisation—creates scalability, responsiveness, and deeper customer engagement. Customer loyalty, though fragile in a multi-app environment, stabilises revenue streams and strengthens lifetime value when supported by consistent satisfaction, convenience, and perceived trust.

These three elements do not function independently; they form a **strategic ecosystem** that drives sustainable growth, competitive resilience, and long-term profitability. For Indian e-grocery firms, success will depend on aligning operational efficiency with advanced technology and differentiated loyalty strategies across generational cohorts and regional markets. By treating these drivers as interconnected rather than standalone initiatives, businesses can build enduring value and position themselves for leadership in the evolving digital retail landscape.

### 6.1 Summary of Findings

Profitability in online grocery retail is inherently multidimensional, shaped by the alignment of internal capabilities with market-oriented strategies. Operational efficiency, technology innovation, and customer loyalty emerge as interdependent factors that collectively determine financial outcomes. Efficiency improvements and automation reduce complexity and cost pressures, while technology enables real-time responsiveness, predictive insights, and scalable service delivery. Customer loyalty, though fragile in a multi-app environment, enhances revenue predictability and strengthens competitive positioning in a crowded digital marketplace. Crucially, it is the synergy among these drivers—rather than isolated improvements—that creates the conditions for sustained profitability, offering a structured lens for both academic inquiry and managerial practice in the evolving e-grocery sector.

### 6.2 Strategic Growth Model

| Pillar                 | Core Actions                                                                            | Outcomes                                                                      |
|------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Operational Efficiency | Inventory optimisation, warehouse automation, last-mile logistics, demand forecasting   | Lower costs, improved accuracy, reduced complexity                            |
| Technology Innovation  | AI-driven analytics, Generative & Agentic AI, real-time platforms, mar-tech integration | Scalability, responsiveness, personalisation, and data-driven decision-making |
| Customer Loyalty       | Segmentation (Gen X, Y, Z), personalised engagement, trust-building, seamless UX        | Stable revenues, higher purchase frequency, stronger lifetime value           |
| Strategic Integration  | Cohesive alignment of efficiency, technology, and loyalty strategies                    | Sustainable profitability, competitive resilience, long-term business growth  |

## 6.3 Concluding Remarks

This study contributes conceptually by positioning operational efficiency, technology innovation, and customer loyalty not as isolated operational or marketing tools, but as interconnected drivers of sustained profitability and business growth. In the highly competitive, low-margin environment of online grocery retail, operational excellence reduces cost pressures and enhances fulfilment accuracy, technology innovation enables scalability and personalisation through AI-driven insights, and customer loyalty stabilises revenues in a market characterised by low switching costs and multi-app usage.

The strategic integration of these three dimensions creates a synergistic ecosystem that strengthens competitive resilience and long-term value creation. For scholars, the framework offers a structured lens to advance theory on digital retail profitability; for practitioners, it provides actionable priorities to align efficiency, innovation, and loyalty strategies across diverse consumer segments and regional markets. While empirical validation remains necessary, this conceptual contribution lays the foundation for future research and managerial decision-making aimed at achieving sustainable growth in India's evolving e-grocery landscape.

### Conflict of Interest Statement

The author(s) declare that there is no conflict of interest regarding the publication of this article, “The **Maximising Profit in Online Grocery Retail: The Strategic Role of Efficiency, Technology, and Customer Engagement**”. The research has been conducted independently, without any financial or personal relationships that could have influenced the interpretations or conclusions presented in this study.

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