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THE "KIRANA TECH" REVOLUTION

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Abstract : Walk down any residential street in Chennai or Mumbai and you will find a kirana shop — a small, family-run store that has supplied households with groceries, snacks, and daily essentials for generations. India has roughly 12 million such stores, making them the backbone of the country's retail system. Yet for decades these shops operated with handwritten ledgers, cash-only transactions, and supplier relationships built entirely on trust and memory. That picture is changing fast. The Kirana Tech Revolution describes the wave of digital transformation sweeping through these small stores — driven by mobile applications, UPI-based payments, cloud-based billing software, and online procurement platforms. This study examines what this transformation means in practice: how it changes day-to-day store operations, what obstacles shop owners face in adopting technology, and how digital tools are helping kirana stores compete in an era dominated by e-commerce giants and organized retail chains. The research draws on secondary data from government reports, industry studies, and startup case analyses to build a comprehensive picture of this ongoing revolution.

INTRODUCTION

In 2016, India's Unified Payments Interface (UPI) processed its first transactions. By 2023-24, the National Payments Corporation of India (NPCI) reported over 130 billion UPI transactions in a single year. Much of this volume flowed through small neighbourhood shops that had never before handled anything other than cash. This shift captures, in one statistic, the pace and scale of the Kirana Tech Revolution.

The word 'kirana' comes from the Persian word for grocery, and these stores have been part of the Indian urban and rural fabric for well over a century. Their strengths — proximity to the customer, personalised service, willingness to extend informal credit, and deep knowledge of neighbourhood preferences — have always been difficult for large supermarkets to replicate. What they historically lacked was operational efficiency: inventory tracking was unreliable, procurement was fragmented, and access to formal credit was nearly impossible without documented financial records.

Technology platforms specifically designed for this segment — including JioMart Partner, Udaan, Dukaan, Khatabook, and OkCredit — have begun to address these gaps. Government initiatives such as the Digital India programme and the Open Network for Digital Commerce (ONDC) have provided further momentum. Together, these forces are reshaping what a kirana store can be and do in the twenty-first century.

STATEMENT OF PROBLEM

Despite their scale and cultural importance, kirana stores face structural vulnerabilities that technology alone cannot solve unless it is adopted thoughtfully and supported adequately. Several interconnected problems define the challenge:

- Operational inefficiency: Most kirana stores still rely on manual billing and memory-based inventory tracking, leading to stock-outs, over-ordering, spoilage, and revenue leakage that goes undetected because there is no data trail.
- Financial exclusion: Banks and formal lenders have historically been reluctant to extend credit to kirana owners because they lack auditable financial records. This forces shop owners to rely on informal moneylenders at high interest rates.
- Supply chain fragmentation: Traditional procurement involves multiple middlemen — local wholesalers, commission agents, and distributors — each adding cost and delay. Kirana owners have little visibility into pricing or product availability beyond their immediate supplier.
- Digital literacy gap: A significant number of kirana owners, particularly in Tier 2 and Tier 3 cities and in rural areas, lack the skills to navigate apps, interpret dashboards, or troubleshoot technical problems without external support.
- Competitive pressure: The rapid growth of quick-commerce platforms offering ten-minute delivery has intensified competition. Without equivalent delivery capabilities or digital order systems, many kirana stores risk losing younger, app-native customers permanently.

NEED FOR STUDY

1. To understand how specific digital tools affect the real-world operations of kirana stores across different regions and business sizes.
2. To identify which barriers — financial, technical, or educational — most strongly prevent tech adoption among kirana owners.
3. To assess whether technology adoption genuinely improves profitability and customer retention, or whether the benefits are unevenly distributed.
4. To explore how kirana tech facilitates financial inclusion by generating digital transaction records that support formal credit access.
5. To inform government agencies, fintech companies, and retail-tech startups on where intervention is most needed.

OBJECTIVES

1. To trace the origins and growth trajectory of the Kirana Tech Revolution in India.
2. To analyse how specific technology platforms have changed billing, inventory, and procurement in kirana stores.
3. To identify the key challenges kirana owners face before and after adopting digital tools.
4. To evaluate the impact of kirana tech on store performance, profitability, and customer experience.
5. To examine how digital payment adoption connects kirana owners to formal financial services.
6. To assess kirana stores' competitive positioning against organised retail and e-commerce.
7. To recommend practical steps for kirana owners, policymakers, and tech platforms to deepen and improve this transformation.

TOOLS ANALYSIS

Research approach: This study uses a descriptive analytical framework, drawing on secondary data from government reports (Digital India, NPCI, RBI), industry publications (NASSCOM, KPMG, McKinsey), and platform case studies (JioMart, Udaan, Dukaan, Khatabook). A conceptual mapping tool is used to trace the technology adoption pathway in kirana stores.

Key platforms analysed:

- **Khatabook & OkCredit:** Digital ledger apps replacing the traditional 'bahi khata'. Allow shop owners to track credit extended to customers and generate repayment reminders. Over 10 million merchants adopted Khatabook within its first three years of operation.
- **Udaan:** A B2B trade platform connecting kirana stores directly with manufacturers and large distributors, eliminating two to three layers of intermediaries and reducing procurement costs by an estimated 10–15%.
- **JioMart Partner:** Enables kirana stores to receive online orders from neighbourhood customers and fulfil them through the store, effectively turning the kirana into a last-mile delivery node.
- **Dukaan:** A no-code platform that allows kirana owners to create their own online storefront in under two minutes, without any programming knowledge.

Statistical indicators: According to a 2022 NASSCOM report, approximately 36% of Indian kirana stores had adopted some form of digital payment by 2021, up from under 5% in 2016. A McKinsey India study estimated that kirana stores using inventory management software reduced wastage by 18–22% on average. The RBI's 2023 Annual Report noted that MSME credit disbursement increased by 28% in states with higher UPI adoption density, suggesting a meaningful link between digital payment records and credit access.

FINDINGS

1. **Billing and inventory efficiency improve measurably.** Kirana stores that moved from manual to app-based billing reported faster transaction times, fewer billing errors, and better stock awareness. The ability to see real-time sales data allowed owners to make more informed restocking decisions, reducing both over-stocking and stock-outs.
2. **UPI adoption has been transformative but uneven.** Digital payments via UPI and wallet applications have become mainstream in urban kirana stores, improving cash flow predictability and reducing theft risk. However, in semi-urban and rural areas, poor network connectivity and low smartphone penetration continue to limit adoption.
3. **Direct supplier access reduces costs.** Platforms like Udaan have given kirana owners direct access to manufacturers and distributors, cutting procurement costs and improving product variety. Stores using such platforms reported being able to stock niche or branded products that were previously inaccessible through local wholesale markets.
4. **Digital records unlock formal credit.** One of the most significant downstream benefits of tech adoption is improved access to institutional finance. Fintech lenders such as Lendingkart and Capital Float use UPI transaction histories and digital ledger data to assess creditworthiness and disburse loans quickly, often within 24–48 hours. This is a profound shift for shop owners who were previously invisible to the formal banking system.
5. **Customer retention improves with home delivery capability.** Kirana stores that integrated with platforms like JioMart Partner or built their own WhatsApp-based ordering systems reported higher repeat purchase rates, particularly among working households that value convenience. This directly addresses the competitive threat from quick-commerce apps.
6. **Digital literacy remains the critical barrier.** Across all studies reviewed, inadequate digital skills emerged as the single most consistent obstacle to tech adoption. Many kirana owners who attempted to adopt technology abandoned it within weeks due to difficulty navigating interfaces, fear of making errors, or lack of local technical support.

CONCLUSION AND FUTURE SCOPE

The Kirana Tech Revolution is not a story about technology replacing the neighbourhood shop. It is a story about technology helping the neighbourhood shop survive, adapt, and grow in a rapidly changing retail environment. The data is clear: stores that adopt digital tools operate more efficiently, serve customers better, face less financial exclusion, and compete more effectively with organized retail.

Yet the revolution remains incomplete. The benefits are concentrated in urban areas and among store owners who already have some degree of digital exposure. For the transformation to be truly inclusive, three things must happen simultaneously: affordable and reliable internet infrastructure must reach smaller towns and villages; training and onboarding support must be embedded into every technology platform as a non-negotiable feature; and government procurement and credit schemes must be designed to reward and incentivise digital adoption at the ground level.

Future research should track whether the financial inclusion gains visible in aggregate data are actually reaching the most marginalised kirana owners — those in rural areas, women-owned stores, and shops run by first-generation entrepreneurs. Additionally, the long-term competitive impact of ONDC on kirana store economics deserves focused study as the platform matures.

SUGGESTIONS

1. **For kirana store owners:** Begin with one tool rather than attempting a complete digital overhaul. UPI acceptance is the lowest-barrier entry point and immediately generates a digital transaction history that will support future credit applications. Once comfortable, add a simple billing app such as Vyapar or Dukaan before exploring procurement platforms.
2. **For technology platforms:** User interfaces must be designed for low-digital-literacy users — local language support, voice-based navigation, and in-store onboarding agents are not optional features but prerequisites for adoption in non-metro markets. Platforms should also build in basic financial literacy content alongside operational tools.
3. **For the government:** The ONDC initiative should be actively promoted to kirana owners as a tool for joining the digital commerce ecosystem without ceding control to a single dominant platform. Subsidised smartphone and data access programmes should be extended to kirana owners in rural and semi-urban areas. The PM SVANidhi scheme's digital incentive model offers a useful template for wider adoption.
4. **For financial institutions:** Banks and NBFCs should develop kirana-specific credit products that accept UPI transaction history and digital ledger records as primary underwriting evidence, rather than requiring formal audited accounts that most small retailers cannot produce.

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