

Business Requirements Document (BRD)

Instamart - Quick Commerce Platform

****Document Version:**** 1.0

****Date:**** Q1 Current Year

****Project Type:**** New Initiative - Quick Commerce (15-30 min delivery)

****Project Owner:**** [TBD]

****Status:**** Approved for MVP Development

Table of Contents

1. Executive Summary & Project Vision
2. Business Objectives & Goals
3. Scope
4. Target Audience & User Personas
5. Functional Requirements
6. Non-Functional Requirements
7. Technical Architecture & Stack Recommendations
8. Integration Requirements
9. Key User Flows
10. Success Metrics & KPIs
11. Risks & Mitigation
12. Milestones & Deliverables

1. Executive Summary & Project Vision

1.1 Project Overview

Instamart is a **quick commerce platform** designed to deliver groceries and daily essentials to customers within **15-30 minutes** of order placement. The platform will operate on a hyper-local model with strategically located dark stores/warehouses in high-density urban areas.

1.2 Business Opportunity

- **Market Gap:** Address the immediate need for ultra-fast delivery of daily essentials
- **Competitive Advantage:** Speed (15-30 min) vs. traditional e-commerce (24-48 hours)
- **Revenue Model:** Delivery fees + markup on products + potential subscription services

1.3 Project Vision

To become the most reliable and fastest grocery delivery service in urban markets, providing instant gratification for customers' daily needs through technology-driven logistics and inventory management.

1.4 Current Phase

MVP (Minimum Viable Product) - Q1 Development

- Focus on core functionality for rapid market entry
- Limited geography launch (1-2 cities, 3-5 stores)
- Essential features only, with Phase 2 enhancements planned

2. Business Objectives & Goals

2.1 Primary Objectives (Q1 - MVP Launch)

1. **Market Entry:** Launch MVP in 2 cities within Q1
2. **Delivery Speed:** Achieve 15-30 minute delivery time for 90% of orders
3. **Customer Acquisition:** Acquire 10,000 active users in first 30 days
4. **Order Volume:** Process 500+ orders per day per city by end of Q1
5. **Operational Efficiency:** Maintain 95%+ order accuracy rate

2.2 Strategic Goals (Q2-Q4)

1. **Expansion:** Expand to 10 cities by Q4
2. **Market Share:** Capture 5% market share in operational cities
3. **Customer Retention:** Achieve 40% repeat order rate within 30 days
4. **Revenue:** Achieve ₹10 Cr monthly GMV by Q4
5. **Operational Excellence:** Reduce delivery time to 12-15 minutes average

2.3 Success Metrics

- **Customer Satisfaction:** NPS > 50
- **Delivery Performance:** 95% orders delivered within 30 minutes
- **Inventory Availability:** 98% in-stock rate for top 1000 SKUs
- **App Rating:** >4.5 stars on app stores

3. Scope

3.1 In-Scope (MVP - Q1)

Customer Facing

- iOS and Android mobile apps
- Web-based ordering platform (responsive)
- User registration and authentication (mobile OTP)
- Product catalog with search and browse
- Real-time inventory visibility
- Cart management
- Multiple payment options (UPI, Cards, Wallet, COD)
- Order tracking with live status updates
- Push notifications for order updates
- Basic customer support (chat/ticket)

Store/Warehouse Management

- Store onboarding and configuration
- Product catalog management per store
- Inventory management (basic)
- Order management dashboard
- Pick, pack, and dispatch workflow

Delivery/Fleet Management

- Rider registration and authentication
- Rider allocation algorithm (nearest available)
- GPS-based route optimization
- Live location sharing with customer

- Proof of delivery (photo/OTP)

Admin Panel

- User management
- Store management
- Inventory oversight
- Order monitoring and intervention
- Basic analytics dashboard
- Pricing management
- Promotions management (basic coupons)

Payment & Order Processing

- Multiple payment gateway integration
- Order lifecycle management
- Refund processing
- Invoice generation

3.2 Out-of-Scope (Phase 2+)

Advanced Features

- Subscription services (Instamart Plus)
- Advanced AI/ML for demand forecasting
- Advanced personalization and recommendations
- Social sharing and referral programs
- Advanced loyalty programs
- Scheduled deliveries

- Multi-cart management
- In-app video support for customer service
- Voice ordering
- AR-based product discovery

Operational Features

- In-house fleet management system (use 3rd party initially)
- Advanced warehouse automation
- Predictive inventory management
- Multi-warehouse routing optimization
- Dark store design and automation
- Advanced fraud detection
- Advanced analytics and business intelligence

Business Features

- B2B sales channel
- Private label products
- Third-party marketplace integration
- International expansion
- Multiple language support beyond MVP languages

4. Target Audience & User Personas

4.1 Target Geography

****Primary:**** Tier 1 cities with high population density

- Age: 22-45 years
- Income: ₹6L+ annually
- Tech-savvy smartphone users
- Urban professionals and families

4.2 User Personas

Persona 1: The Working Professional - "Busy Neha"

****Profile:****

- Age: 28-35 years
- Occupation: Corporate employee/Entrepreneur
- Location: Metro city, high-rise apartment
- Pain Points: No time for grocery shopping, last-minute needs
- Use Case: Forgotten items, emergency needs, after-work ordering
- Tech Comfort: High
- Order Frequency: 3-4 times/week
- Order Value: ₹300-600

Persona 2: The Young Homemaker - "Modern Priya"

****Profile:****

- Age: 25-40 years
- Occupation: Homemaker/Work from home
- Location: Urban residential areas
- Pain Points: Managing household with kids, weather constraints
- Use Case: Daily fresh produce, monthly staples, impulse buys

- Tech Comfort: Medium-High
- Order Frequency: Daily or alternate day
- Order Value: ₹500-800

Persona 3: The Hostel Student - "Samarth"

Profile:

- Age: 18-24 years
- Occupation: College student
- Location: Hostels/Paying guest accommodations
- Pain Points: Limited pocket money, no kitchen access
- Use Case: Snacks, beverages, instant food, personal care
- Tech Comfort: Very High
- Order Frequency: 2-3 times/week
- Order Value: ₹150-300

Persona 4: The Senior Citizen - "Retired Uncle"

Profile:

- Age: 60+ years
- Occupation: Retired
- Location: Urban residential societies
- Pain Points: Mobility issues, health concerns
- Use Case: Medicines, daily essentials, heavy items
- Tech Comfort: Medium (needs simple UI)
- Order Frequency: 1-2 times/week
- Order Value: ₹800-1500

5. Functional Requirements

5.1 Customer App (iOS/Android/Web)

5.1.1 Authentication & Onboarding (MVP)

Feature	Requirement ID	Description	Priority
Mobile OTP Login	CA-AUTH-001	Login via mobile number with OTP verification	P0
User Profile	CA-AUTH-002	Basic profile: Name, phone, email, addresses	P0
Address Management	CA-AUTH-003	Add/edit multiple delivery addresses with GPS	P0
Basic KYC	CA-AUTH-004	Optional PAN/Aadhar for high-value orders	P1

5.1.2 Product Discovery & Browsing (MVP)

Feature	Requirement ID	Description	Priority
Home Screen	CA-DISC-001	Featured products, categories, offers banner	P0
Category Navigation	CA-DISC-002	Hierarchical category tree (Grocery, Fruits, Snacks, etc.)	P0
Search	CA-DISC-003	Product search with auto-suggest	P0
Product Listing	CA-DISC-004	Grid/list view with price, image, availability	P0
Product Details	CA-DISC-005	Images, description, price, nutritional info	P0
Filters	CA-DISC-006	Filter by price, brand, dietary preference	P1
Sort	CA-DISC-007	Sort by price, popularity, freshness	P1
Recently Viewed	CA-DISC-008	Track last 10 viewed products	P2

5.1.3 Cart & Checkout (MVP)

Feature	Requirement ID	Description	Priority
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Cart Management	CA-CART-001	Add/remove items, quantity update	P0
Cart Persistence	CA-CART-002	Save cart across sessions/devices	P0
Price Breakdown	CA-CART-003	Item cost, delivery fee, taxes, discount	P0
Delivery Slot	CA-CART-004	Real-time delivery ETA (15-30 min)	P0
Promo Code	CA-CART-005	Apply discount codes	P1
Delivery Instructions	CA-CART-006	Add delivery notes (gate code, etc.)	P1
Order Summary	CA-CART-007	Final review before payment	P0

5.1.4 Payment (MVP)

Feature	Requirement ID	Description	Priority
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Multiple Options	CA-PAY-001	UPI, Credit/Debit Cards, Wallet, COD	P0
Payment Gateway	CA-PAY-002	Integration with Razorpay/Stripe/PayU	P0
Save Payment Method	CA-PAY-003	Secure tokenization for future use	P1
Split Payment	CA-PAY-004	Multiple payment methods per order	P2
Payment Retry	CA-PAY-005	Auto-retry failed payments	P1

5.1.5 Order Tracking (MVP)

Feature	Requirement ID	Description	Priority
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Order Status	CA-ORD-001	Real-time status: Confirmed ? Packed ? Dispatched ? Delivered	P0

Live Tracking	CA-ORD-002	GPS map view with rider location	P0
ETA Updates	CA-ORD-003	Dynamic ETA based on live conditions	P0
Order History	CA-ORD-004	Past orders with re-order option	P0
Cancel Order	CA-ORD-005	Cancel within allowed timeframe	P1
Order Details	CA-ORD-006	Complete order info, invoices, receipts	P0

5.1.6 Notifications (MVP)

Feature	Requirement ID	Description	Priority
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Push Notifications	CA-NOT-001	Order updates, offers, cart reminders	P0
SMS Backup	CA-NOT-002	Critical updates via SMS	P1
In-app Notifications	CA-NOT-003	Notification center	P1
Preference Center	CA-NOT-004	User control over notification types	P2

5.1.7 Customer Support (MVP)

Feature	Requirement ID	Description	Priority
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Help Center	CA-SUP-001	FAQ and help articles	P1
Chat Support	CA-SUP-002	Live chat with support agent	P1
Issue Reporting	CA-SUP-003	Report damaged/missing items	P0
Refund Request	CA-SUP-004	Initiate refund process	P0
Ratings & Reviews	CA-SUP-005	Rate products and delivery experience	P1

5.2 Store/Warehouse Management System

5.2.1 Store Setup & Configuration (MVP)

Feature	Requirement ID	Description	Priority
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Store Onboarding	ST-SETUP-001	Create store profile with location, hours	P0
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Service Area	ST-SETUP-002	Define delivery radius (3-5 km)	P0
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Store Hours	ST-SETUP-003	Operating hours and holidays	P0
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Staff Assignment	ST-SETUP-004	Assign staff to stores	P1
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5.2.2 Inventory Management (MVP)

Feature	Requirement ID	Description	Priority
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SKU Management	ST-INV-001	Add/edit products with images, pricing	P0
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Stock Tracking	ST-INV-002	Real-time inventory counts	P0
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Stock Alerts	ST-INV-003	Low stock notifications	P0
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Batch Management	ST-INV-004	Track expiry dates (FIFO)	P1
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Stock Reconciliation	ST-INV-005	Manual stock adjustment	P1
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5.2.3 Order Management (MVP)

Feature	Requirement ID	Description	Priority
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Order Queue	ST-ORD-001	New orders dashboard	P0
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Pick List	ST-ORD-002	Auto-generated picking list	P0
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Packing Station	ST-ORD-003	Mark items as packed	P0
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Dispatch Handover	ST-ORD-004	Assign to rider/handover	P0
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Order Status Update	ST-ORD-005	Real-time sync with customer app	P0
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5.2.4 Dashboard & Reporting (MVP)

Feature	Requirement ID	Description	Priority
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Daily Summary	ST-DASH-001	Orders, revenue, top products	P0
Inventory Report	ST-DASH-002	Stock levels, expiring items	P1
Performance Metrics	ST-DASH-003	Packing time, accuracy rate	P1

5.3 Delivery/Fleet Management

5.3.1 Rider Management (MVP)

Feature	Requirement ID	Description	Priority
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Rider Onboarding	DL-REG-001	Registration with documents (DL, Aadhar)	P0
Rider Authentication	DL-REG-002	OTP-based login	P0
Availability Toggle	DL-REG-003	Online/Offline status	P0
Profile Management	DL-REG-004	Basic profile, payout details	P1

5.3.2 Assignment & Routing (MVP)

Feature	Requirement ID	Description	Priority
----- ----- ----- -----			
Auto Assignment	DL-ASSN-001	Assign nearest available rider	P0
Route Optimization	DL-ASSN-002	Optimal route calculation	P0
Batch Delivery	DL-ASSN-003	Group multiple orders if nearby	P1
Manual Reassignment	DL-ASSN-004	Admin override for assignments	P1

5.3.3 Rider App (MVP)

Feature	Requirement ID	Description	Priority
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|-----|-----|-----|-----|

Order Acceptance	DL-RAPP-001	Accept/reject delivery requests	P0
Navigation	DL-RAPP-002	Integrated maps (Google/MapmyIndia)	P0
Customer Contact	DL-RAPP-003	Call/message customer	P0
Proof of Delivery	DL-RAPP-004	Photo upload or OTP verification	P0
Earnings Tracker	DL-RAPP-005	View daily/weekly earnings	P1
Live Location Share	DL-RAPP-006	Share location with customer	P0

5.3.4 Performance Monitoring (MVP)

| Feature | Requirement ID | Description | Priority |

|-----|-----|-----|-----|

Live Tracking	DL-MON-001	Admin view of all active riders	P0
Performance Metrics	DL-MON-002	On-time rate, order count, rating	P1
Payout Management	DL-MON-003	Calculate and process payments	P1

5.4 Admin Panel

5.4.1 User Management (MVP)

| Feature | Requirement ID | Description | Priority |

|-----|-----|-----|-----|

Customer List	ADM-USER-001	View/search customers	P0
Rider List	ADM-USER-002	View/search riders	P0
Store Staff List	ADM-USER-003	View/store staff	P1
Block/Unblock	ADM-USER-004	Suspend user accounts	P1

5.4.2 Order Management (MVP)

Feature	Requirement ID	Description	Priority
Order Dashboard	ADM-ORD-001	Real-time order monitoring	P0
Order Details	ADM-ORD-002	Complete order timeline and details	P0
Manual Intervention	ADM-ORD-003	Cancel, refund, reassign orders	P0
Bulk Operations	ADM-ORD-004	Bulk status updates	P2

5.4.3 Store & Inventory Oversight (MVP)

Feature	Requirement ID	Description	Priority
Store Dashboard	ADM-STORE-001	Multi-store view and status	P0
Inventory Sync	ADM-STORE-002	Central inventory monitoring	P0
Price Management	ADM-STORE-003	Update prices across stores	P0

5.4.4 Promotions & Pricing (MVP)

Feature	Requirement ID	Description	Priority
Coupon Management	ADM-PROM-001	Create and manage discount codes	P1
Delivery Fee Rules	ADM-PROM-002	Configure delivery pricing	P1
Offer Dashboard	ADM-PROM-003	View active offers and redemptions	P1

5.4.5 Analytics & Reports (MVP)

Feature	Requirement ID	Description	Priority
Business Metrics	ADM-ANAL-001	GMV, Orders, AOV, CAC, LTV	P0
Operational Metrics	ADM-ANAL-002	Delivery time, order accuracy	P0

| Revenue Reports | ADM-ANAL-003 | Payments, commissions, fees | P0 |

| Export Data | ADM-ANAL-004 | CSV/PDF export of reports | P1 |

5.4.6 Settings & Configurations (MVP)

| Feature | Requirement ID | Description | Priority |

|-----|-----|-----|-----|

| System Settings | ADM-SET-001 | Platform-level configurations | P0 |

| Role Management | ADM-SET-002 | Admin/staff access control | P1 |

| Audit Logs | ADM-SET-003 | Track all admin actions | P1 |

| Notification Templates | ADM-SET-004 | Customize email/SMS templates | P2 |

5.5 Payment & Order Processing

5.5.1 Order Lifecycle (MVP)

| Feature | Requirement ID | Description | Priority |

|-----|-----|-----|-----|

| Order States | PAY-ORD-001 | Define: Placed ? Confirmed ? Packed ? Dispatched ? Delivered ?
Cancelled | P0 |

| State Transitions | PAY-ORD-002 | Automated and manual state changes | P0 |

| Timeout Handling | PAY-ORD-003 | Auto-cancel if not confirmed in 5 min | P0 |

| Failed Payment Retry | PAY-ORD-004 | Retry logic for pending payments | P1 |

5.5.2 Payment Gateway Integration (MVP)

| Feature | Requirement ID | Description | Priority |

|-----|-----|-----|-----|

| UPI Integration | PAY-GW-001 | Support for GPay, PhonePe, Paytm | P0 |

| Card Processing | PAY-GW-002 | Debit/Credit card payments | P0 |

| Wallet Integration | PAY-GW-003 | Platform wallet (Phase 2) | P2 |

| Net Banking | PAY-GW-004 | Direct bank transfer | P1 |

| COD | PAY-GW-005 | Cash on delivery | P0 |

5.5.3 Refunds & Settlements (MVP)

| Feature | Requirement ID | Description | Priority |

|-----|-----|-----|-----|

| Refund Processing | PAY-RF-001 | Auto-refund for cancellations | P0 |

| Refund Tracking | PAY-RF-002 | Track refund status | P0 |

| Payout Settlement | PAY-RF-003 | Daily settlement to stores/riders | P1 |

| Dispute Management | PAY-RF-004 | Handle payment disputes | P2 |

5.5.4 Invoicing (MVP)

| Feature | Requirement ID | Description | Priority |

|-----|-----|-----|-----|

| Invoice Generation | PAY-INV-001 | Auto-generate GST invoice | P0 |

| Digital Invoice | PAY-INV-002 | Email/SMS invoice link | P0 |

| Invoice History | PAY-INV-003 | Download past invoices | P1 |

5.6 Inventory Management

5.6.1 Core Inventory (MVP)

| Feature | Requirement ID | Description | Priority |

|-----|-----|-----|-----|

| Real-time Sync | INV-SYNC-001 | Inventory updates across all channels in real-time | P0 |

| Stock Reservation | INV-SYNC-002 | Reserve inventory on cart addition (5 min) | P0 |

| Auto Deduction | INV-SYNC-003 | Deduct on successful payment | P0 |

| Expiry Tracking | INV-SYNC-004 | FIFO based expiry management | P1 |

5.6.2 Catalog Management (MVP)

| Feature | Requirement ID | Description | Priority |

|-----|-----|-----|-----|

| Product Catalog | INV-CAT-001 | Central catalog with images, prices, descriptions | P0 |

| Category Management | INV-CAT-002 | Multi-level category structure | P0 |

| Product Attributes | INV-CAT-003 | Units, MRP, shelf life, dietary tags | P0 |

| Bulk Upload | INV-CAT-004 | CSV import for new products | P1 |

5.6.3 Replenishment Alerts (MVP)

| Feature | Requirement ID | Description | Priority |

|-----|-----|-----|-----|

| Low Stock Alert | INV-REP-001 | Auto-alert when stock < reorder level | P0 |

| Reorder Suggestion | INV-REP-002 | Suggest reorder quantity based on velocity | P1 |

| Supplier Management | INV-REP-003 | Track supplier details (Phase 2) | P2 |

6. Non-Functional Requirements

6.1 Performance Requirements

| Requirement ID | Category | Specification |

|-----|-----|-----|

	NFR-PERF-001		App Startup Time		< 2 seconds on 4G network	
	NFR-PERF-002		Page Load Time		< 1 second for catalog pages	
	NFR-PERF-003		Search Response		< 500ms for search queries	
	NFR-PERF-004		API Response Time		95th percentile < 200ms	
	NFR-PERF-005		Order Placement		< 3 seconds end-to-end	
	NFR-PERF-006		Concurrent Users		Support 10,000 concurrent users (MVP)	
	NFR-PERF-007		Inventory Sync		< 2 seconds across all systems	

6.2 Scalability Requirements

	Requirement ID		Category		Specification	
	-----		-----		-----	
	NFR-SCAL-001		Horizontal Scaling		Auto-scale to handle 3x traffic spikes	
	NFR-SCAL-002		Database Scaling		Support 1M+ users, 100K+ daily orders	
	NFR-SCAL-003		Geographic Scaling		Easy addition of new cities/stores	
	NFR-SCAL-004		Microservices		Independent scaling of critical services	

6.3 Availability & Reliability

	Requirement ID		Category		Specification	
	-----		-----		-----	
	NFR-AVAIL-001		Uptime		99.9% uptime during business hours	
	NFR-AVAIL-002		Disaster Recovery		RTO < 4 hours, RPO < 15 minutes	
	NFR-AVAIL-003		Redundancy		Multi-AZ deployment, no single point of failure	
	NFR-AVAIL-004		Offline Support		Rider app works offline, syncs when online	
	NFR-AVAIL-005		Graceful Degradation		Core ordering works if payment/notifications fail	

6.4 Security Requirements

Requirement ID	Category	Specification
-----	-----	-----
NFR-SEC-001	Data Encryption	AES-256 for data at rest, TLS 1.3 for transit
NFR-SEC-002	Authentication	OTP-based auth, session timeout 24 hours
NFR-SEC-003	Authorization	Role-based access control (RBAC)
NFR-SEC-004	Payment Security	PCI-DSS compliant, tokenization of cards
NFR-SEC-005	Data Privacy	GDPR/DPDP Act compliance, PII protection
NFR-SEC-006	API Security	Rate limiting, OAuth 2.0, input validation
NFR-SEC-007	Penetration Testing	Security audit before production launch
NFR-SEC-008	Admin Access	2FA mandatory for admin accounts

6.5 Usability & UX Requirements

Requirement ID	Category	Specification
-----	-----	-----
NFR-USAB-001	App Rating	Target 4.5+ stars on Play Store/App Store
NFR-USAB-002	Accessibility	WCAG 2.1 Level A compliance
NFR-USAB-003	Mobile-First	Optimized for one-handed use
NFR-USAB-004	Language	English + Hindi for MVP
NFR-USAB-005	Onboarding	< 3 steps to first order

6.6 Compliance Requirements

Requirement ID	Category	Specification
-----	-----	-----
NFR-COMP-001	GST Compliance	GSTIN integration for invoicing
NFR-COMP-002	Food Safety	FSSAI compliance for grocery items
NFR-COMP-003	Data Protection	DPDP Act compliance for customer data

| NFR-COMP-004 | Taxation | TDS/TCS calculation and reporting |

| NFR-COMP-005 | Labor Laws | Rider contract compliance (if applicable) |

6.7 Monitoring & Logging

| Requirement ID | Category | Specification |

|-----|-----|-----|

| NFR-MON-001 | Application Logs | Structured logging with correlation IDs |

| NFR-MON-002 | Error Tracking | Real-time error alerting (Sentry/DataDog) |

| NFR-MON-003 | Performance Metrics | APM monitoring for all services |

| NFR-MON-004 | Business Metrics | Real-time dashboard for key business KPIs |

| NFR-MON-005 | SLA Monitoring | Track response times against SLA |

7. Technical Architecture & Stack Recommendations

7.1 Architecture Principles (MVP-Optimized)

- **Time to Market:** Use managed services and established frameworks
- **Cost Efficiency:** Pay-as-you-go infrastructure
- **Scalability:** Microservices-ready but monolith initially (for speed)
- **Maintainability:** Clean architecture with clear separation of concerns
- **Vendor Lock-in Mitigation:** Containerized deployment (Docker/K8s)

7.2 Recommended Tech Stack

Customer App (iOS/Android)

| Component | Technology | Rationale |

|-----|-----|-----|

| Cross-Platform | **Flutter** | Single codebase for iOS/Android, faster MVP development |

| State Management | Provider/Bloc | Proven Flutter patterns |

| Local Storage | Hive/SQLite | Offline cart and cache |

| Analytics | Firebase Analytics | Free, comprehensive |

| Crash Reporting | Crashlytics | Real-time crash tracking |

Customer Web App

| Component | Technology | Rationale |

|-----|-----|-----|

| Frontend Framework | **Next.js (React)** | SEO + performance, SSR capabilities |

| UI Library | Material UI / Ant Design | Rapid development |

| State Management | Redux Toolkit | Predictable state |

Backend API

| Component | Technology | Rationale |

|-----|-----|-----|

| API Framework | **Node.js (NestJS)** | Fast development, TypeScript support |

| API Gateway | AWS API Gateway / Kong | Rate limiting, auth, routing |

| Database | **PostgreSQL** | Relational data integrity |

| Cache | Redis | Session management, rate limiting |

| Message Queue | AWS SQS / RabbitMQ | Async processing (order events) |

| Search | Elasticsearch (Phase 2) | Advanced product search |

| Storage | AWS S3 / Cloudflare R2 | Product images, documents |

****Admin Panel****

Component	Technology	Rationale
Frontend	**React Admin / Retool**	Rapid admin panel development
Authentication	JWT + OAuth2	Secure admin access

****Rider App****

Component	Technology	Rationale
Platform	**Flutter**	Same as customer app, code reusability
Maps Integration	Google Maps SDK / MapmyIndia	Navigation
Background Location	Geolocation plugin	Continuous location updates

****Infrastructure (Cloud-Native)****

Component	Technology	Rationale
Cloud Provider	**AWS** (or GCP)	Enterprise-grade, managed services
Compute	AWS ECS / EKS	Container orchestration
CI/CD	GitHub Actions / Jenkins	Automated deployments
Monitoring	CloudWatch + Datadog	Unified observability
CDN	CloudFront / Cloudflare	Static assets delivery

7.3 Database Design Considerations

Core Tables (MVP)

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Users (Customers, Riders, Staff)

Products (SKU, pricing, inventory)

Stores (Location, service area)

Orders (Order items, status, payments)

Inventory (Stock levels, expiry)

Payments (Transactions, refunds)

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Indexing Strategy

- Composite indexes on (store_id, product_id) for inventory
- Indexes on order_date, user_id for reporting
- Geo-indexes for store/service area lookup

7.4 Microservices Breakdown (Post-MVP)

For scalability beyond MVP, consider:

- **Order Service:** Order lifecycle management
- **Inventory Service:** Stock and catalog
- **User Service:** Authentication and profiles
- **Payment Service:** Transactions and settlements
- **Notification Service:** Push, SMS, email
- **Delivery Service:** Rider assignment and tracking

7.5 Caching Strategy

- **L1:** In-memory cache (Redis) for hot data (inventory, prices)
- **L2:** CDN for static assets (images, JS/CSS)
- **TTL:** 5 minutes for inventory, 1 hour for catalog

8. Integration Requirements

8.1 Payment Gateway Integration (P0 - MVP)

Provider	Integration Type	Use Case
-----	-----	-----
Razorpay	Primary	UPI, Cards, Net Banking
Stripe	Backup	International cards (future)
PayU	Backup	Alternative payment methods

Integration Details:

- Webhook endpoints for payment status updates
- Retry mechanism for failed webhook delivery
- Idempotency keys for duplicate transaction prevention

8.2 Communication Services

8.2.1 SMS Gateway (P0)

Provider	Use Case
-----	-----
Twilio / Exotel	OTP, order updates, critical alerts
AWS SNS	Backup SMS service

Requirements:

- 10DLT compliance for India (registered templates)
- Fallback provider for delivery failures
- Delivery reports tracking

8.2.2 Email Service (P1)

Provider	Use Case
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SendGrid / AWS SES	Invoices, promotional emails
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8.2.3 Push Notifications (P0)

Provider	Use Case
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Firebase Cloud Messaging (FCM)	Android/iOS push notifications
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APNS	iOS-specific push
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8.3 Maps & Location Services (P0)

Provider	Use Case
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Google Maps Platform	Geocoding, distance calculation, routing
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MapmyIndia	Alternative for compliance/cost
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OSRM (Open Source)	Route optimization (self-hosted for scale)
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Integration Points:

- Store service area boundary validation
- Real-time distance calculation for delivery ETA
- Rider location tracking

- Reverse geocoding for address auto-complete

8.4 Analytics & Monitoring (P0)

| Tool | Purpose |

|-----|-----|

| Google Analytics / Mixpanel | User behavior analytics |

| Firebase Analytics | App performance, user acquisition |

| Datadog / New Relic | APM, infrastructure monitoring |

| Sentry | Error tracking and crash reporting |

| CloudWatch | AWS infrastructure logs |

8.5 Third-Party APIs

8.5.1 Address Validation (P1)

| Provider | Use Case |

|-----|-----|

| Google Places API | Address autocomplete |

| MapmyIndia Pincode API | Pincode-based location validation |

8.5.2 Identity Verification (P2)

| Provider | Use Case |

|-----|-----|

| Digilocker | Document verification for riders |

| OTP providers | Aadhar-based verification |

8.6 Integration Architecture

- **API Gateway:** Single entry point for all external integrations
- **Message Queue:** Decouple payment webhooks and async operations
- **Circuit Breakers:** Prevent cascade failures in 3rd party integrations
- **Retry Policies:** Exponential backoff for transient failures

9. Key User Flows

9.1 Customer Journey Flow

...

1. Onboarding & First Order

?? Download App / Visit Web

?? Mobile Number Registration

?? OTP Verification

?? Location Permission / Enter Address

?? Browse Products / Search

?? Add to Cart

?? Select Delivery Address

?? View Delivery ETA (15-30 min)

?? Apply Promo Code (optional)

?? Choose Payment Method

?? Complete Payment

?? Order Confirmation Screen

?? Live Order Tracking

?? Delivery & Rating

2. Repeat Order Flow

?? Login (Auto if session valid)

?? Home Screen with "Reorder" CTA

?? One-click Reorder

?? Skip to Checkout (auto-add to cart)

?? Payment (prefilled)

?? Track Order

3. Issue Resolution Flow

?? Order History ? Select Order

?? Report Issue (Wrong/Damaged/Missing)

?? Chat with Support OR

?? Auto-refund for eligible cases

?? Resolution confirmation

...

9.2 Order Lifecycle Flow

...

Order States & Transitions:

[INITIAL]

?

PLACED (Payment Pending/Success)

? (Auto-confirmation < 1 min)

CONFIRMED (Store accepts order)

? (Pick + Pack < 5 min)

PACKED (Items ready for dispatch)

? (Assignment < 1 min)

DISPATCHED (Rider picked up)

? (Delivery < 15-25 min)

DELIVERED (Proof of delivery captured)

?

COMPLETED (Rating solicited)

[Exception Paths]

?

CANCELLED (Customer/Admin initiated)

?

REFUNDED (Payment reversed)

[Failure Paths]

?? PAYMENT FAILED ? Retry / Cancel

?? OUT OF STOCK ? Partial Cancel / Substitute

?? NO RIDER ? Delayed Dispatch / Cancel

?? ADDRESS ISSUE ? Cancel / Re-attempt

...

9.3 Store Operations Flow

...

Order Processing Workflow:

1. New Order Received

- ?? Push notification + Sound alert
- ?? Order appears in "New Orders" queue
- ?? 30-second timeout for acceptance

2. Picking Process

- ?? Generate pick list (optimized route)
- ?? Picker scans items (if barcode system)
- ?? Mark picked items in system
- ?? Move to packing station

3. Packing & Quality Check

- ?? Verify items against order
- ?? Pack in branded bags
- ?? Attach delivery label
- ?? Photo capture (optional)
- ?? Mark as "Packed"

4. Dispatch

- ?? System looks for available rider
- ?? Assign order to rider
- ?? Rider arrives at store
- ?? Handover + OTP verification

?? Mark as "Dispatched"

5. Post-Dispatch

?? Customer gets notification

?? Store continues to next order

?? Inventory auto-deducted

...

9.4 Rider Delivery Flow

...

Rider App Flow:

1. Login & Availability

?? App Login (OTP)

?? Go Online (toggle)

?? Location permission check

2. Order Assignment

?? New order notification

?? Order details (store, customer, items)

?? Accept or Reject (15 sec window)

?? View optimized route

3. Pickup from Store

?? Navigate to store

?? Show order code to store staff

?? Verify items (count check)

?? Capture store handover OTP

?? Mark as "Picked Up"

4. Delivery to Customer

?? Navigate to customer location

?? Call/SMS customer on arrival

?? Verify identity (order number/name)

?? Deliver items

?? Capture proof (OTP / Photo)

?? Mark as "Delivered"

5. Earnings & Next Order

?? View delivery fee earned

?? Return to availability for next order

?? End shift (logout)

...

9.5 Admin Intervention Flow

...

Exception Handling by Admin:

Scenario: Order stuck in "Confirmed" for >10 min

1. Admin Dashboard Alert

- ?? Red flag on order card
- ?? View store staff status
- ?? Check inventory availability

2. Intervene

- ?? Option 1: Notify store (push/SMS)
- ?? Option 2: Reassign to different store
- ?? Option 3: Cancel + Refund with apology coupon
- ?? Option 4: Manual status update

3. Follow-up

- ?? Monitor resolution
- ?? Update customer via manual notification
- ?? Log incident for SLA tracking

...

10. Success Metrics & KPIs

10.1 Business KPIs (North Star Metrics)

Metric	Target (MVP)	Target (Q4)	Measurement
-----	-----	-----	-----
Daily Orders	500/day/city	5,000/day/city	Order system

| **GMV** | ?1.5L/day/city | ?10 Cr/month | Payment system |

| **Active Users** | 10,000 | 100,000 | User system |

| **Repeat Rate (30d)** | 20% | 40% | User analytics |

10.2 Operational KPIs

| Metric | Target | Measurement |

|-----|-----|-----|

| **On-Time Delivery (30min)** | >90% | Order timestamp comparison |

| **Order Accuracy** | >95% | Post-delivery complaints |

| **Inventory Availability** | >98% (Top 1000 SKUs) | Daily stock checks |

| **Store Packing Time** | <5 min avg | Order lifecycle logs |

| **Rider Assignment Time** | <60 sec | Assignment logs |

10.3 Customer Experience KPIs

| Metric | Target | Measurement |

|-----|-----|-----|

| **App Rating** | >4.5 stars | App stores |

| **NPS Score** | >50 | In-app surveys |

| **Support Resolution Time** | <15 min (chat) | Support system |

| **Cancellation Rate** | <5% | Order cancellations |

| **Customer Acquisition Cost** | <?150 | Marketing spend / new users |

10.4 Financial KPIs

Metric	Target	Measurement
Average Order Value	£450+	GMV / Orders
Contribution Margin	>15% per order	(Revenue - COGS - Delivery Cost)
Delivery Cost per Order	<£25	Rider fees + overheads
Payment Success Rate	>95%	Payment gateway data

10.5 Rider KPIs

Metric	Target	Measurement
Rider Utilization	>70%	Active hours / Total hours
Rider Rating	>4.2 stars	Customer ratings
On-Time Pickup	>90%	Store handover timestamps

10.6 Platform Health KPIs

Metric	Target	Measurement
API Uptime	>99.9%	Monitoring tools
App Crash Rate	<1%	Crashlytics
Payment Failure Rate	<3%	Payment logs
Page Load Time	<2 sec	Performance monitoring

11. Risks & Mitigation (Aggressive Q1 Timeline)

11.1 High Priority Risks

Risk ID	Risk Description	Impact	Probability	Mitigation Strategy
RISK-001	Timeline Slippage - MVP launch delayed beyond Q1	HIGH	HIGH	Mitigation: Use cross-platform (Flutter) for faster development Prioritize P0 features only Pre-built integrations (Stripe, Firebase) Parallel development tracks Daily standups, weekly sprint reviews MVP scope locked after Week 2
RISK-002	Inventory Management Complexity - Real-time sync challenges	HIGH	HIGH	Mitigation: Use simple reservation system (5 min hold) Real-time sync via PostgreSQL pub/sub Manual reconciliation tools for store staff Expose inventory API with aggressive caching Start with limited SKUs (500-1000) per store
RISK-003	Rider Availability - Not enough riders for demand spikes	HIGH	MEDIUM	Mitigation: Partner with existing fleet providers (Shadowfax, Dunzo) Surge pricing for peak hours Minimum rider guarantee with partners In-house recruitment running in parallel Manual allocation backup for critical orders
RISK-004	Payment Failures - High transaction failure rates	MEDIUM	HIGH	Mitigation: Integrate 2 payment gateways (primary + backup) Smart retry logic with different banks Multiple payment options prominently displayed Pre-authorization for COD orders Real-time payment status monitoring
RISK-005	Store Onboarding Delay - Stores not ready for launch	MEDIUM	MEDIUM	Mitigation: Pre-signed MOUs with 3-4 stores per city Provide store setup kit (app, scanner, printer) Dedicated store onboarding team Go-live checklist and dry runs Phased store launch (1 store per week)

11.2 Medium Priority Risks

Risk ID	Risk Description	Impact	Probability	Mitigation Strategy
RISK-006	App Rejection - iOS/Android app store rejection	MEDIUM	LOW	Mitigation: Follow guidelines strictly from day 1 Beta testing with TestFlight/Play Store beta Privacy policy and data handling compliance Separate build for review vs production
RISK-007	3rd Party API Downtime - Maps, SMS, Payment gateway outage	MEDIUM	MEDIUM	Mitigation: Circuit breakers in place Fallback providers for critical services Graceful degradation (e.g., show manual address entry if maps fail) Cache critical data to reduce API calls
RISK-008	Data Privacy Compliance - DPDP Act violations	HIGH	LOW	Mitigation: Privacy-by-design architecture User consent management from onboarding Data encryption at rest and transit Regular security audits Clear data retention policies
RISK-009	Customer Education - Users don't understand 15-30 min promise	MEDIUM	MEDIUM	Mitigation: Prominent UI messaging on serviceable areas Real-time ETA display on checkout Delightful unboxing experience First order free delivery incentive Social media education campaign
RISK-010	Quality Control - Wrong/Damaged items in fast-paced environment	MEDIUM	HIGH	Mitigation: Pick-list verification mandatory Photo capture at packing (stored for 7 days) Easy refund process for customers Rider checks items count at pickup Store staff performance tracking

11.3 Low Priority / Long-term Risks

| Risk ID | Risk Description | Mitigation Strategy |

|-----|-----|-----|

| **RISK-011** | **Competition Response** - Existing players copy model | Build brand loyalty via CX, lock-in with subscriptions (Phase 2) |

| **RISK-012** | **Supply Chain Dependency** - Stock unavailability from suppliers | Multiple suppliers per category, demand forecasting (Phase 2) |

| **RISK-013** | **Rider Safety** - Accidents during fast deliveries | Insurance coverage, safety training, speed limiters (if feasible) |

| **RISK-014** | **Negative Reviews** - Initial bugs affect ratings | Aggressive beta testing, rapid iteration post-launch, PR team on standby |

11.4 Contingency Plans

Scenario: Launch delayed by 2 weeks

- **Plan B:** Launch with "Beta" tag in App Store
- **Plan C:** Web-first launch to test flows, apps in parallel

Scenario: Rider shortage on Day 1

- **Plan B:** Limit deliveries to 2 km radius
- **Plan C:** Founder/team makes first 100 deliveries

Scenario: Payment gateway down

- **Plan B:** Switch to backup gateway automatically
- **Plan C:** Enable COD only temporarily

****Scenario: Inventory sync issues****

- ****Plan B:**** Manual inventory update every 2 hours
- ****Plan C:**** Pause orders for affected store, redirect to nearby store

12. Milestones & Deliverables

12.1 Q1 Timeline Overview (12-Week Sprint)

...

Week 1-2: Planning & Design

Week 3-6: Core Backend Development

Week 5-8: Frontend Development (Customer App)

Week 7-9: Store/Rider Systems Development

Week 9-10: Integration & Testing

Week 11: Beta Testing & Bug Fixes

Week 12: Launch Prep & Go-Live

...

12.2 Detailed Milestones

****Milestone 1: Foundation & Design**** (Week 1-2)

****Deliverables:****

- [] Finalized BRD and technical architecture

- [] UI/UX designs for all screens (Customer, Rider, Store, Admin)
- [] Database schema finalization
- [] API contracts and swagger documentation
- [] Project setup and repository structure
- [] CI/CD pipeline setup
- [] Dev/Staging environments provisioned

****Sign-off:**** Technical architecture review, Design approval

****Milestone 2: Backend Core APIs**** (Week 3-6)

****Deliverables:****

- [] User authentication API (OTP, JWT)
- [] Product catalog and search API
- [] Cart and checkout API
- [] Order management API (CRUD + state machine)
- [] Inventory management API
- [] Payment gateway integration API
- [] Basic admin APIs
- [] Database migrations and seeding scripts
- [] Unit tests (70% coverage)

****Sign-off:**** API documentation, Postman collection

****Milestone 3: Customer App MVP**** (Week 5-8)

****Deliverables:****

- [] iOS app (Flutter) - P0 features
- [] Android app (Flutter) - P0 features
- [] User onboarding flow (registration, address)
- [] Product browsing and search
- [] Cart management and checkout
- [] Payment integration (UPI, Cards)
- [] Order tracking screen
- [] Basic profile and order history
- [] App store assets (icons, screenshots)

****Sign-off:**** Beta build on TestFlight & Play Store Beta

****Milestone 4: Store & Rider Systems**** (Week 7-9)

****Deliverables:****

- [] Store staff dashboard (web-based)
- [] Order queue and pick-list generation
- [] Packing and dispatch workflow
- [] Rider app (Flutter) - P0 features
- [] Rider assignment algorithm
- [] GPS location tracking
- [] Proof of delivery (OTP/Photo)

- [] Basic analytics dashboard

****Sign-off:**** Store staff training completion, Rider app beta

****Milestone 5: Integration & QA**** (Week 9-10)

****Deliverables:****

- [] End-to-end integration testing
- [] Payment gateway webhook handling
- [] SMS/email notification integration
- [] Maps API integration
- [] Load testing (1000 concurrent users)
- [] Security testing (OWASP Top 10)
- [] Bug fixes and performance optimization
- [] UAT with pilot store staff

****Sign-off:**** QA sign-off, Security audit report

****Milestone 6: Beta Launch & Feedback**** (Week 11)

****Deliverables:****

- [] Closed beta with 100-200 trusted users
- [] Real-world testing with 1-2 stores
- [] Feedback collection and prioritization

- [] Critical bug fixes
- [] Performance monitoring setup
- [] Customer support training
- [] Rider training sessions

****Sign-off:**** Beta success metrics (>80% on-time delivery)

****Milestone 7: Production Launch**** (Week 12)

****Deliverables:****

- [] Production infrastructure deployment
- [] App store submissions (iOS/Android)
- [] Payment gateway production credentials
- [] Monitoring and alerting setup (PagerDuty/Slack)
- [] Launch day war room setup
- [] Press release and marketing materials
- [] Customer support systems live
- [] Go/No-Go decision meeting

****Sign-off:**** Launch approval, App store approvals

12.3 Post-Launch Activities (Week 13+)

Week 13-14: Hypercare Phase

- Daily war room meetings
- Real-time bug fixing
- Customer feedback triage
- Rider performance monitoring
- Inventory reconciliation

Week 15-16: Stabilization

- Performance optimization
- Feature enhancements (P1 from backlog)
- Marketing campaigns for user acquisition
- Begin Phase 2 planning

12.4 Deliverables Summary

Technical Deliverables

1. **Source Code:** All repositories on GitHub/GitLab
2. **Documentation:** API docs, architecture diagrams, runbooks
3. **Infrastructure:** Terraform/CloudFormation scripts
4. **Database:** Migrations and backup procedures
5. **CI/CD:** Automated build and deployment pipelines

Application Deliverables

1. **Customer Apps:** iOS App Store & Android Play Store
2. **Rider Apps:** iOS & Android (internal distribution)
3. **Web Apps:** Customer web, Store dashboard, Admin panel

Operational Deliverables

1. **Training Materials:** Staff and rider training docs
2. **SOPs:** Standard operating procedures for stores
3. **Support Scripts:** Customer support macros and scripts
4. **Incident Response Plan:** Runbook for common issues

Business Deliverables

1. **Launch Plan:** Marketing and PR plan
2. **Legal Documents:** Terms of service, privacy policy
3. **Vendor Contracts:** Payment gateway, SMS, cloud providers
4. **Insurance Policies:** Rider insurance, liability coverage

13. Appendices

13.1 Assumptions

- Customers have smartphones with internet connectivity
- Stores have basic internet and packing station
- Riders have smartphones with data plans
- Payment gateway will have >95% success rate
- Initial launch cities have adequate rider pool
- 3rd party APIs (maps, SMS) will have >99% uptime

13.2 Dependencies

- **External:** Payment gateway account setup, App Store developer accounts
- **Internal:** Store partnerships finalized, Rider recruitment completed
- **Technical:** Cloud accounts provisioned, Domain names purchased

13.3 Glossary

- **AOV:** Average Order Value
- **GMV:** Gross Merchandise Value
- **P0:** Priority 0 (Must have)
- **P1:** Priority 1 (Should have)
- **P2:** Priority 2 (Nice to have)
- **SLA:** Service Level Agreement
- **SKU:** Stock Keeping Unit
- **COD:** Cash on Delivery
- **NPS:** Net Promoter Score

13.4 Contact Information

Project Owner: [Name] - [Email]

Tech Lead: [Name] - [Email]

Product Manager: [Name] - [Email]

Delivery Lead: [Name] - [Email]

Document Approved By:

Date: _____

****Next Review:**** Post-MVP Launch (Q2)