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# Business Requirements Document (BRD)

Project Title: **INVENTORY OPERATIONS ENHANCEMENT INITIATIVE**

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## Document Control

Item	Details
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## Executive Summary

MapleDash Grocers operates a network of five Fulfillment Centers (FCs) supporting an e-grocery business across the Greater Toronto Area. While the company has established core operational systems such as an Inventory Management System (IMS), Warehouse Management System (WMS), and Order Management System (OMS), inventory operations remain impacted by manual interventions, delayed system updates, and inconsistent replenishment execution.

A current-state assessment, supported by a detailed data analysis initiative, identified recurring challenges including inventory inaccuracies, delayed inbound updates, uneven stock distribution across SKUs, frequent replenishment exceptions, elevated overselling risk ( $ATP < 0$ ), and prolonged inventory holding periods. These challenges are reflected in key operational KPIs such as Inventory Turnover, Days of Inventory, Days of Cover, % SKUs Below ROP, and % SKUs Oversold.

This Business Requirements Document (BRD) defines the business and high-level system requirements for enhancing MapleDash's existing Inventory Management System. The objective is to improve inventory accuracy, strengthen inbound and replenishment controls, reduce operational risk, and enable more reliable order fulfillment outcomes, while maintaining system simplicity and avoiding large-scale platform replacements.

The proposed enhancements focus on semi-automated inventory updates, system-directed replenishment and cycle counting, lightweight integrations between the IMS and upstream systems, and clearer exception handling workflows. These improvements are designed to directly support measurable improvements in inventory accuracy, replenishment effectiveness, ATP reliability, and inventory efficiency metrics already tracked via existing Power BI dashboards.

This BRD serves as the foundation for subsequent requirement elaboration, stakeholder validation, UAT planning, and future-state solution design activities.

## 1. Background & Business Context

MapleDash Grocers is a mid-sized e-grocery retailer operating multiple Fulfillment Centers (FCs) across the Greater Toronto Area. The company manages a diverse product assortment including fresh produce, frozen items, pantry goods, beverages, and personal care products. Inventory operations are supported by an Inventory Management System (IMS), Warehouse Management System (WMS), and Order Management System (OMS), supplemented by manual workarounds and spreadsheet-based tracking in operational workflows.

As order volumes increased and SKU-level complexity expanded, operational inefficiencies became more visible across receiving, putaway, replenishment, cycle counting, and order fulfillment activities. These inefficiencies manifested as delayed inventory updates, inconsistent Available-to-Promise (ATP) values, elevated overselling risk, uneven inventory coverage across SKUs, and excessive manual intervention by warehouse supervisors.

To better understand the scale and impact of these issues, MapleDash initiated a data analysis sub-project during the discovery phase. This analysis consolidated inventory snapshots, order transactions, and supplier delivery data to assess inventory health, demand volatility, replenishment effectiveness, expiry exposure, and inbound reliability across FCs.

Key findings highlighted systemic gaps between operational execution and system behavior, including misalignment between safety stock thresholds and demand patterns, delayed synchronization of Quantity on Hand (QOH) and ATP, concentration of inventory in slow-moving SKUs, and recurring replenishment exceptions in high-velocity categories. These gaps were reflected in performance indicators such as Inventory Turnover, Days of Inventory, Median Sellable Coverage, % SKUs Below ROP, and Total ATP Quantity.

This BRD builds directly on those findings, translating observed operational gaps and KPI-level performance issues into formal business and system requirements for targeted IMS enhancements.

## 2. Business Objectives

The primary objective of the MapleDash Inventory Management System (IMS) enhancement initiative is to improve inventory accuracy, operational reliability, and replenishment effectiveness while maintaining system simplicity and scalability appropriate for a mid-sized e-grocery organization.

The following business objectives are Specific, Measurable, Achievable, Relevant, and Time-bound (SMART):

- **Objective 1 – Improve Inventory Accuracy**
  - **Aligned KPIs:** % SKUs Oversold (ATP < 0), % SKUs Below ROP, % SKUs Below Safety Stock, Median Sellable Coverage (Days), Total ATP Qty, Inventory Turnover (Annual), Days of Inventory, Days of Cover
  - **Specific:** Reduce discrepancies between physical stock and system-recorded inventory levels.
  - **Measurable:** Decrease inventory variance incidents (reflected through ATP overselling and ROP breaches) by at least 30%.
  - **Achievable:** Through system-directed cycle counting, real-time validations, and automated inventory updates.
  - **Relevant:** Inventory inaccuracies directly contribute to stockouts, overselling, and customer dissatisfaction.
  - **Time-bound:** Within 3 months of IMS enhancement rollout.
- **Objective 2 – Reduce Replenishment Exceptions and Stockout Risk**
  - **Aligned KPIs:** % SKUs Below ROP, % SKUs Below Safety Stock, Days of Cover, Median Sellable Coverage (Days), Total ATP Qty, Avg. Daily Orders, Total Order Qty
  - **Specific:** Proactive replenishment for high-demand and high-risk SKUs; reduce firefighting.
  - **Measurable:** Reduce the percentage of SKUs falling below Reorder Point (ROP) by 20% and below Safety Stock by 15%.
  - **Achievable:** By introducing system-driven replenishment triggers aligned with demand patterns and SKU classification (ABC–XYZ).
  - **Relevant:** Frequent replenishment exceptions currently increase supervisor workload and stockout risk.
  - **Time-bound:** Within 4 months of implementation.
- **Objective 3 – Increase Inbound Processing Reliability**
  - **Aligned KPIs:** % SKUs Oversold (ATP < 0), Total ATP Qty, Days of Cover, Total Orders, Total Revenue, Inventory Turnover
  - **Specific:** Improve the consistency and timeliness of inventory (QOH and ATP) updates.

- **Measurable:** Ensure 95% of inbound receipts update Quantity on Hand (QOH) and ATP within 15 minutes of receiving completion.
  - **Achievable:** Through automated receipt validation, ASN matching, and reduced manual data entry.
  - **Relevant:** Delayed inbound updates cause ATP inaccuracies and downstream fulfillment issues.
  - **Time-bound:** Within 2 months of go-live.
- **Objective 4 – Reduce Manual Intervention and Supervisor Workload**
  - **Aligned KPIs:** % SKUs Oversold (ATP < 0), % SKUs Below ROP, Median Sellable Coverage (Days)
  - **Specific:** Minimize the need for manual reviews and exception handling by supervisors.
  - **Measurable:** Reduce supervisor intervention events related to inventory discrepancies by 25%.
  - **Achievable:** By filtering exceptions to true anomalies and automating standard inventory updates.
  - **Relevant:** Supervisors currently spend excessive time resolving preventable inventory issues.
  - **Time-bound:** Within 3 months post-implementation.
- **Objective 5 – Improve Inventory Availability Without Increasing Stock Levels**
  - **Aligned KPIs:** Days of Cover, Median Sellable Coverage (Days), Total Inventory Value, Inventory Turnover (Annual), Value Expiring < 30 Days
  - **Specific:** Improve effective inventory availability using existing stock levels; no capital inflation.
  - **Measurable:** Improve Days of Cover efficiency (optimize coverage without increasing Total Inventory Value).
  - **Achievable:** Through better SKU-level stock distribution and improved ATP accuracy rather than additional purchasing.
  - **Relevant:** MapleDash aims to improve service levels without tying up additional working capital.
  - **Time-bound:** Within 6 months of enhancement deployment.
- **Objective 6 – Establish a Foundation for Data-Driven Inventory Decisions**
  - **Aligned KPIs:** All 18 KPIs
  - **Specific:** Enable consistent, reliable metrics for operational decision-making and governance.
  - **Measurable:** Standardize KPI definitions and enable monthly operational reviews using consistent inventory dashboards.
  - **Achievable:** By aligning IMS outputs with Power BI-based reporting already in use.

- **Relevant:** Data inconsistency currently limits trust in reports and hinders proactive management.
- **Time-bound:** Within 6 months of implementation.

## **3. Project Scope**

This section defines the boundaries of the MapleDash IMS Enhancement initiative. It clarifies what the project will deliver and, equally important, what it will not attempt to address at this stage.

### **3.1 In-Scope**

The following items are explicitly included within the scope of this initiative.

#### ***3.1.1 Inventory Management System (IMS) Enhancements***

- Enhancements to the existing IMS to improve:
  - Inventory accuracy (QOH and ATP)
  - Timeliness of inventory updates
  - Exception handling and visibility
- No replacement of the current IMS platform.

#### ***3.1.2 Receiving Process Improvements***

- Improved receiving workflows, including:
  - Advance Shipment Notice (ASN) usage
  - Automated validation of received quantities
  - Faster QOH and ATP updates post-receipt
- Handling of receiving discrepancies (shortage, damage, mismatch).
- Supervisor exception review for receiving anomalies.
- Improved visibility of receiving reliability indicators (e.g., receipt delays and discrepancies) without modifying supplier operations.

#### ***3.1.3 Putaway Process Optimization***

- Standardization of putaway execution and validation.
- Improved system capture of SKU-location movements.
- Automated inventory updates following confirmed putaway.
- Supervisor intervention limited to material putaway exceptions.

#### ***3.1.4 Cycle Counting Improvements***

- System-directed cycle count generation based on SKU risk.
- Real-time validation of count submissions.
- Threshold-based exception routing to supervisors.
- Automated inventory updates for approved adjustments.

#### ***3.1.5 Replenishment Process Improvements***

- System-driven replenishment triggers based on:
  - Reorder Point (ROP)
  - Safety Stock thresholds

- SKU demand patterns
- Reduced reliance on manual replenishment decisions.
- Improved linkage between replenishment execution and picking-zone availability.

### **3.1.6 Order Picking & Packing Enhancements**

- Improvements to pick-time inventory validation.
- Clear handling of shortages and exception escalation.
- Single, consistent inventory deduction point aligned with ATP accuracy.
- No changes to last-mile delivery operations.

### **3.1.7 Data & Reporting Enablement (Operational Level)**

- Alignment of IMS outputs with existing Power BI dashboards.
- Standardized KPI definitions related to:
  - Inventory health and efficiency
  - Replenishment effectiveness
  - Inbound reliability and supplier performance visibility
- No enterprise BI platform or data warehouse implementation.

### **3.1.8 Process Documentation & BA Artifacts**

- AS-IS and TO-BE process maps for all scoped processes.
- Business Case
- Business Requirements Document (BRD).
- Product Backlog (User Stories, Acceptance Criteria)
- Use Case Diagrams, Use Case Specifications, Wireframes
- High-level UAT planning and test scenarios.

## **3.2 Out-of-Scope**

The following items are explicitly excluded from this initiative.

### **3.2.1 Full System Replacement**

- Replacement of IMS, WMS, or OMS platforms.
- Migration to a new ERP or enterprise inventory platform.

### **3.2.2 Advanced Analytics & Forecasting**

- AI or Machine-learning-based demand forecasting.
- Predictive or prescriptive analytics solutions.
- Automated pricing or promotion optimization.

### **3.2.3 Real-Time Enterprise Integrations**

- Real-time, event-driven system integrations.
- Enterprise Service Bus (ESB) or middleware platforms.
- Full API orchestration across systems.

### ***3.2.4 Last-Mile Delivery Operations***

- Shipping and dispatch operations (outsourced).
- Courier routing or delivery optimization.
- Driver performance tracking or integration.

### ***3.2.5 Supplier Internal Processes***

- Supplier-side systems or workflows.
- Supplier technology implementations.
- Supplier contract or SLA renegotiation.

### ***3.2.6 Organizational Restructuring***

- Changes to staffing models or job roles.
- Workforce reductions or reallocations.
- Compensation or incentive redesign.

### ***3.2.7 Enterprise Data Governance Program***

- Master Data Management (MDM) implementation.
- Enterprise data lakes or warehouses.
- Company-wide BI governance framework.

## **3.3 Scope Alignment Note**

This initiative is intentionally designed as a focused IMS enhancement project rather than a full digital transformation program.

### **The scope reflects:**

- MapleDash's current data maturity
- Operational realities of a mid-sized e-grocery organization
- A phased approach to long-term modernization

Future initiatives may build upon this foundation once measurable business value is realized.

## 4. Stakeholders & Roles (Summary)

### Purpose

To establish clear accountability and ownership for business decisions, operational execution, and system enhancements covered by this BRD.

Detailed stakeholder analysis, engagement strategy, and RACI are documented in Phase 1 – Stakeholder Identification & Analysis. This section provides a high-level summary only.

Role	Responsibility
Business Owner (COO / Head of Operations)	Owns overall inventory performance, approves scope and priorities
Operations Manager	Defines operational requirements and validates process changes
Warehouse Supervisors	Represent FC-level execution and exception handling
Warehouse Associates	Execute Fulfillment tasks; Indirect impact from IMS logic changes.
Inventory Planner	Day-to-day owner of ROP, safety stock, replenishment cadence.
Procurement Manager	Oversees supplier performance and inbound coordination
Suppliers	External but essential for OTD, lead time, ASN behavior. Treat them as stakeholder group for scorecards.
IT / Systems Lead	Ensures feasibility of IMS enhancements and integrations
Business Analyst	Requirements elicitation, process mapping, traceability, validation

For detailed Stakeholder Analysis (including engagement strategies) and role-specific interview questions, please to the “Stakeholder Analysis, Engagement Strategies, & Interviews” document in the GitHub repository.

## **5. Assumptions, Constraints, Dependencies, & Risks**

This section outlines the key assumptions under which the proposed solution has been defined, as well as the constraints that limit or shape the design and delivery of the initiative.

### **5.1 Assumptions**

To define a stable baseline for BA work, we assume:

- Current IMS and WMS will continue to operate during the project.
- Historical sales, supplier, and inventory data used in the Power BI analysis is representative of typical operations.
- Stakeholders will be available for discovery workshops and clarifications.
- Supplier contracts are not changing during the BA project period.
- Warehouse operating models remain constant (staffing, equipment, layout).

### **5.2 Constraints**

These constraints influence what the BA project can deliver:

- IMS has limited configurability; enhancements must fit within existing architecture.
- Supplier performance data is partially incomplete; some assumptions needed.
- Business needs to maintain BA deliverables within a 6–10 weeks' timeline.
- Warehouse teams cannot commit to daily workshops (availability constraint).
- No budget for purchasing new software platforms during this cycle.

### **5.3 Dependencies**

This project depends on:

- Accurate and timely access to inventory, supplier, and order data.
- Input from Warehouse Managers and Inventory Planners.
- IT's confirmation of technical feasibility for each enhancement.
- Existing OMS/WMS integrations remaining stable throughout the project.

### **5.4 Risks**

This section identifies potential risks that could impact scope, timeline, cost, or adoption of the proposed solution.

#### **5.4.1 Key Risks & Mitigation Strategies**

Risk Category	Risk Description	Impact	Mitigation Strategy
Change Adoption	Warehouse staff resist new workflows	Medium	Early involvement, role-based training, clear “what’s in it for me” messaging
Data Quality	Inaccurate master data undermines automation	High	Pre-implementation data validation and ownership assignment
Scope Creep	Stakeholders request real-time BI or system replacement	Medium	Reinforce agreed scope and phased roadmap
System Limitations	IMS cannot support required automation rules	High	Validate capabilities early; design workarounds if needed
Timeline	Peak season disrupts testing and rollout	Medium	Schedule deployments during low-volume windows
Exception Overload	Poorly tuned thresholds create excessive alerts	Medium	Pilot thresholds and refine post-go-live
Integration Delays	Batch integrations fail or lag	Low-Medium	Monitoring, logging, and fallback manual controls

#### **5.4.2 Assumption-to-Risk Traceability**

- If CSV-based data exports become unreliable → reporting accuracy degrades.
- If stakeholder availability drops → validation delays occur.
- If barcode compliance weakens → system accuracy erodes.
- If automation rules are over-engineered → user trust declines.

#### **5.4.3 Risk Governance**

- All identified risks will be:
  - Reviewed during weekly project check-ins
  - Logged in a risk register
  - Escalated where required
- High-impact risks will trigger:
  - Design reassessment
  - Scope or timeline adjustment

## 6. Business Requirements

### Purpose of This Section:

This section defines what the business must be able to achieve as a result of the proposed Inventory Management System (IMS) enhancements. These requirements are business-outcome driven, not technical designs.

#### Note:

- Detailed functional and non-functional requirements will be elaborated through TO-BE processes, user stories, and acceptance criteria.
- Success criteria are aligned with the existing inventory, fulfillment, and supplier KPIs already tracked through Power BI dashboards.

### 6.1 Inventory Accuracy & Availability

#### *BR-01: Improve Inventory Accuracy Across Warehouses*

- **Description:** The business must maintain accurate, near-real-time inventory visibility across all fulfillment centers.
- **Business Rationale:** Inaccurate inventory leads to ATP overselling, order cancellations, and operational rework.
- **Success Criteria:**
  - % SKUs Oversold ( $ATP < 0$ ) reduced to  $< 1\%$
  - QOH and ATP reflect physical stock within defined latency thresholds
- **Primary Stakeholders:** Operations Manager, Warehouse Supervisors

#### *BR-02: Reduce Inventory Imbalances Across SKUs*

- **Description:** The business must identify and correct uneven stock distribution across SKUs to prevent hidden stockout risks.
- **Business Rationale:** Aggregate inventory metrics mask SKU-level shortages and excesses.
- **Success Criteria:**
  - Median Sellable Coverage moves closer to Days of Cover
  - Reduction in emergency SKU-level replenishments
- **Primary Stakeholders:** Inventory Planner, Operations Manager

### 6.2 Replenishment & Stock Control

#### *BR-03: Enable Proactive, Rules-Based Replenishment*

- **Description:** The business must trigger replenishment actions based on predefined inventory thresholds and demand patterns.
- **Business Rationale:** Manual replenishment decisions are reactive and inconsistent.

- **Success Criteria:**
  - % SKUs Below ROP reduced
  - Improved stability in Days of Cover
- **Primary Stakeholders:** Inventory Planner, Procurement Manager

#### ***BR-04: Minimize Supervisor Dependency for Routine Replenishment***

- **Description:** Routine replenishment decisions should not require constant supervisor intervention.
- **Business Rationale:** Supervisors should focus on exceptions, not standard operational workflows.
- **Success Criteria:** Supervisor involvement limited primarily to exception cases
- **Primary Stakeholders:** Warehouse Supervisors, Operations Leadership

### **6.3 Receiving Efficiency**

#### ***BR-05: Improve Receiving Accuracy***

- **Description:** The business must validate inbound shipments efficiently and accurately against expected deliveries.
- **Business Rationale:** Late or inaccurate discrepancy detection distorts inventory availability and planning.
- **Success Criteria:**
  - Faster resolution of receiving discrepancies
  - Reduced delay between receipt completion and inventory availability
- **Primary Stakeholders:** Warehouse Operations, Procurement

#### ***BR-06: Reduce Manual Data Entry During Receiving***

- **Description:** Receiving processes must minimize manual updates to inventory records.
- **Business Rationale:** Manual data entry increases latency and error risk.
- **Success Criteria:**
  - Majority of inbound inventory updates performed system-assisted or automatically
- **Primary Stakeholders:** Warehouse Associates, Operations

### **6.4 Cycle Counting & Inventory Governance**

#### ***BR-07: Standardize Cycle Counting Across Warehouses***

- **Description:** The business must apply consistent, risk-based cycle counting rules across all fulfillment centers.
- **Business Rationale:** Inconsistent counting undermines trust in inventory KPIs.
- **Success Criteria:** Regular cycle count coverage aligned to SKU risk profiles
- **Primary Stakeholders:** Inventory Control, Operations

#### ***BR-08: Focus Human Review on High-Risk Variances***

- **Description:** Only material inventory variances should require supervisor review.
- **Business Rationale:** Blanket variance reviews waste operational capacity.
- **Success Criteria:**
  - Reduced volume of supervisor-reviewed adjustments
  - Faster resolution of material variances
- **Primary Stakeholders:** Warehouse Supervisors

### **6.5 Order Fulfillment Reliability**

#### ***BR-09: Prevent Order Shortages During Picking***

- **Description:** The business must reduce pick-time shortages caused by inaccurate inventory records.
- **Business Rationale:** Pick shortages delay fulfillment and degrade customer experience.
- **Success Criteria:** Reduced pick exception rate
- **Primary Stakeholders:** Fulfillment Operations, Customer Experience

#### ***BR-10: Maintain Seamless Flow from Picking to Packing***

- **Description:** Inventory deductions must reflect completed picks without redundant scans or manual corrections.
- **Business Rationale:** Duplicate scanning adds labor cost without improving accuracy.
- **Success Criteria:** Accurate QOH and ATP updates after pick completion
- **Primary Stakeholders:** Warehouse Operations

### **6.6 Supplier Performance Visibility**

#### ***BR-11: Improve Supplier Delivery Reliability Visibility***

- **Description:** The business must consistently measure and monitor supplier delivery reliability and lead-time behavior.
- **Business Rationale:** Poor inbound reliability inflates safety stock and disrupts planning decisions.
- **Success Criteria:**
  - Clear visibility into OTD%, lead time, and variability trends
- **Primary Stakeholders:** Procurement, Inventory Planning

### **6.7 Governance & Decision Support**

#### ***BR-12: Establish a Single Version of Inventory Truth***

- **Description:** All operational teams must rely on a consistent, standardized set of inventory KPIs.
- **Business Rationale:** Conflicting KPI definitions drive misaligned decisions.

- **Success Criteria:** o Agreed KPI definitions used consistently across Operations, Procurement, and Finance
- **Primary Stakeholders:** Operations Leadership, Finance

## 7. Functional Requirements

### Purpose

This section defines what the enhanced Inventory Management System (IMS) must be capable of doing to support MapleDash's future-state operations.

### These requirements:

- Describe system behavior, not screens or architecture
- Are derived from TO-BE processes and business rules

### 7.1 Receiving Process

#### *FR-01: ASN Validation Capability*

The system must allow warehouse staff to receive shipments against an Advance Shipment Notice (ASN).

##### Key Behaviors

- Match received SKUs and quantities against ASN
- Identify quantity, damage, or expiry mismatches

##### Traceability

- TO-BE Receiving
- BR-05, BR-06

#### *FR-02: Receiving Exception Management*

The system must generate receiving exceptions when discrepancies exceed defined tolerances.

##### Key Behaviors

- Flag discrepancies automatically
- Notify supervisors for review
- Capture exception resolution outcome

##### Traceability

- TO-BE Receiving
- BR-05

#### *FR-03: Automated Inventory Update Post-Receiving*

The system must automatically update inventory records once receiving is completed and approved.

## **Key Behaviors**

- Update Quantity on Hand (QOH)
- Recalculate Available-to-Promise (ATP)
- Prevent premature availability during unresolved exceptions

## **Traceability**

- TO-BE Receiving
- BR-01, BR-05, BR-06

## **7.2 Putaway Process**

### ***FR-04: System-Directed Putaway***

The system must recommend valid storage locations for received SKUs.

## **Key Behaviors**

- Validate SKU-location compatibility
- Prevent storage in unauthorized locations

## **Traceability**

- TO-BE Putaway
- BR-02

### ***FR-05: Putaway Confirmation & Validation***

The system must confirm putaway completion before inventory becomes available for picking.

## **Key Behaviors**

- Accept confirmation from warehouse associate
- Validate quantity and location
- Trigger exceptions for mismatches

## **Traceability**

- TO-BE Putaway
- BR-02

### ***FR-06: Automated Inventory Synchronization***

The system must update inventory records immediately after validated putaway.

## **Key Behaviors**

- Update QOH and ATP
- Notify downstream processes (replenishment, picking)

## Traceability

- TO-BE Putaway
- BR-01

## 7.3 Replenishment (Backstock → Picking Zones) Process

### *FR-07: Reorder Point Monitoring*

The system must continuously monitor SKU inventory levels against defined reorder points.

## Key Behaviors

- Identify SKUs below ROP
- Trigger replenishment tasks

## Traceability

- TO-BE Replenishment
- BR-02, BR-03

### *FR-08: Exception-Based Supervisor Intervention*

The system must escalate replenishment tasks to supervisors only when exceptions occur.

## Key Behaviors

- Identify insufficient backstock
- Route exceptions for supervisor review

## Traceability

- TO-BE Replenishment
- BR-03, BR-04

## 7.4 Cycle Counting & Inventory Adjustments Process

### *FR-09: System-Directed Cycle Counting*

The system must generate cycle count tasks based on SKU risk profiles.

## Key Behaviors

- Prioritize high-value, volatile, or perishable SKUs
- Assign count tasks to warehouse associates

## Traceability

- TO-BE Cycle Counting
- BR-02, BR-04, BR-07

#### ***FR-10: Real-Time Count Validation***

The system must validate submitted counts in real time.

#### **Key Behaviors**

- Compare submitted count to system quantity
- Apply tolerance thresholds

#### **Traceability**

- TO-BE Cycle Counting
- BR-01, BR-07

#### ***FR-11: Variance Resolution Workflow***

The system must route count variances beyond tolerance to supervisors.

#### **Key Behaviors**

- Allow supervisor approval or rejection
- Apply approved adjustments automatically

#### **Traceability**

- TO-BE Cycle Counting
- BR-08

### **7.5 Order Picking & Packing Process**

#### ***FR-12: Pick-Time Inventory Validation***

The system must validate inventory availability at pick time.

#### **Key Behaviors**

- Confirm ATP before picking
- Flag shortages immediately

#### **Traceability**

- TO-BE Order Picking & Packing
- BR-03, BR-09, BR-10

#### ***FR-13: Single Inventory Deduction Enforcement***

The system must deduct inventory at a single defined point in the pick-to-pack flow.

#### **Key Behaviors**

- Prevent duplicate deductions
- Maintain consistency across processes

## **Traceability**

- TO-BE Order Picking & Packing
- BR-01,BR-10

## **7.6 Supplier Performance**

### ***FR-14: Supplier Delivery Performance Tracking***

The system must capture and calculate supplier delivery performance metrics.

#### **Key Behaviors**

- Track on-time delivery percentage (OTD)
- Calculate lead time and lead time variability
- Support supplier performance reporting

#### **Traceability**

BR-11

### ***FR-15: Supplier Dependency Visibility***

The system must provide visibility into supplier concentration risk.

#### **Key Behaviors**

- Identify top suppliers by quantity/value dependency
- Highlight high-risk dependency scenarios

#### **Traceability**

BR-11

## **7.7 KPI Governance & Reporting**

### ***FR-16: Standardized KPI Calculation***

The system must calculate inventory KPIs using consistent definitions.

#### **Key Behaviors**

- Single source of truth for KPIs
- Version-controlled KPI logic

#### **Traceability**

BR-12

## **8. Non-Functional Requirements (Lightweight)**

### **Purpose**

To define operational quality expectations for the enhanced IMS without prescribing technical architecture or enterprise-level SLAs.

### **Non-Functional Requirements**

- Inventory updates (QOH, ATP) must reflect operational changes within 1–5 minutes
- System availability must support all FC operating hours
- All inventory adjustments must be audit-logged with timestamp and user/system source
- Exception handling actions must be traceable and reviewable
- System responsiveness must support warehouse floor operations without introducing delays.

Detailed UAT plan and implementation plan will be defined later.

## 9. Business Rules & Policies

### Purpose of This Section

This section defines the decision logic, thresholds, and governing policies that must be enforced consistently across MapleDash's inventory and warehouse operations.

#### These rules:

- Guide system behavior
- Standardize operational decisions
- Reduce human inconsistency
- Enable traceability from business intent to system functionality

#### Note:

- These are business-owned rules, not technical implementations.
- Detailed execution logic will be defined later during functional requirement elaboration.

### 9.1 Inventory Availability & Accuracy Rules

#### *BRP-01: Available-to-Promise (ATP) Integrity*

- ATP must never fall below zero for sellable SKUs.
- If  $\text{ATP} < 0$  occurs, the SKU must be flagged as oversold.
- Oversold SKUs must be excluded from new customer orders until resolved.

**Business Owner:** Operations

**Rationale:** Prevent customer cancellations and fulfillment failures.

#### *BRP-02: Real-Time Inventory Update Priority*

- Inventory updates from receiving, putaway, picking, and cycle counting must be prioritized over batch reporting.
- Where real-time updates are not feasible, updates must occur within defined latency limits.

**Business Owner:** Operations

**Rationale:** Inventory accuracy and ATP reliability directly impact order fulfillment performance.

### 9.2 Receiving Rules

#### *BRP-03: ASN-Based Receiving Validation*

- All Receiving shipments must be matched against an Advance Shipment Notice (ASN).

- Any variance between received quantity and ASN quantity must generate an exception.

**Business Owner:** Procurement / Warehouse Operations

**Rationale:** Early discrepancy detection prevents downstream inventory distortion.

#### ***BRP-04: Receiving Discrepancy Escalation***

- Quantity, damage, or expiry discrepancies must be reviewed by a Warehouse Supervisor.
- Discrepancies beyond tolerance thresholds must be communicated to Procurement.

**Business Owner:** Warehouse Operations

**Rationale:** Ensures accountability and supplier performance visibility.

### **9.3 Putaway & Storage Rules**

#### ***BRP-05: Location Validation Before Putaway***

- SKUs may only be stored in system-approved locations.
- Location mismatches must trigger an exception.

**Business Owner:** Inventory Control

**Rationale:** Prevents misplaced inventory and picking errors.

#### ***BRP-06: Putaway Completion Confirmation***

- Inventory records must only be updated once putaway is completed and confirmed.
- Partial or pending putaway must not inflate available stock.

**Business Owner:** Operations

**Rationale:** Avoids false availability signals.

### **9.4 Replenishment Rules**

#### ***BRP-07: Reorder Point (ROP) Enforcement***

- SKUs below ROP must trigger replenishment actions.
- ROP thresholds may vary by SKU category and demand volatility.

**Business Owner:** Inventory Planning

**Rationale:** Prevents stockouts while controlling excess inventory.

#### ***BRP-08: Supervisor Intervention by Exception Only***

- Routine replenishment actions should proceed automatically.
- Supervisor review is required only for exceptions (e.g., insufficient backstock).

**Business Owner:** Warehouse Operations

**Rationale:** Optimizes supervisory capacity.

## 9.5 Cycle Counting Rules

### ***BRP-09: Risk-Based Cycle Count Coverage***

- Cycle counting frequency must be based on SKU risk profile (e.g., value, volatility, perishability).
- High-risk SKUs must be counted more frequently.

**Business Owner:** Inventory Control

**Rationale:** Improves inventory accuracy where it matters most.

### ***BRP-10: Variance Threshold Governance***

- Inventory variances within tolerance may auto-adjust.
- Variances beyond tolerance require supervisor approval.

**Business Owner:** Operations

**Rationale:** Balances accuracy with operational efficiency.

## 9.6 Order Fulfillment Rules

### ***BRP-11: Pick Validation Before Fulfillment***

- Orders may only proceed if sufficient ATP exists at pick time.
- Pick-time shortages must trigger replenishment or exception handling.

**Business Owner:** Fulfillment Operations

**Rationale:** Reduces failed or delayed orders.

### ***BRP-12: Single Inventory Deduction Point***

- Inventory deduction must occur at a defined point in the pick-to-pack process.
- Duplicate deductions must be avoided.

**Business Owner:** Operations

**Rationale:** Prevents inventory inconsistencies.

## 9.7 Supplier Performance Rules

### ***BRP-13: Supplier On-Time Delivery Tracking***

- Supplier On-Time Delivery (OTD) must be calculated using standardized logic.
- Persistent underperformance must be flagged for review.

**Business Owner:** Procurement

**Rationale:** Enables supplier risk management.

#### ***BRP-14: Supplier Dependency Awareness***

- High dependency on individual suppliers must be visible to decision-makers.
- Dependency thresholds should inform sourcing strategies.

**Business Owner:** Procurement

**Rationale:** Reduces supply chain risk.

#### ***BRP-15: Supplier On-Time Delivery (OTD) Thresholds***

- Supplier OTD must be monitored continuously using standardized logic.
- Suppliers with OTD below 85% must be flagged for review.
- Suppliers below 70% OTD must be classified as high-risk.
- High-risk suppliers must trigger tighter Receiving validation, exception handling, and Procurement review.
- Defining or renegotiating supplier SLAs is outside the scope of this project.

**Business Owner:** Procurement

**Rationale:** Persistent delivery delays materially impact inventory accuracy, replenishment effectiveness, and service levels.

#### ***BRP-16: Lead Time Variability Awareness***

- Supplier lead time variability must be tracked alongside average lead time.
- SKUs sourced from high-variability suppliers must carry higher safety buffers or stricter replenishment monitoring.

**Business Owner:** Inventory Planning / Procurement

**Rationale:** Average lead time alone is insufficient to manage supply risk.

### **9.8 Governance & KPI Consistency Rules**

#### ***BRP-17: KPI Definition Consistency***

- Inventory KPIs must have a single agreed definition across teams.
- Any changes to KPI logic must be formally approved.
- KPI definitions must align with Power BI dashboards used for operational reviews.

**Business Owner:** Operations Leadership

**Rationale:** Prevents conflicting interpretations and supports trusted decision-making.

## 10. Success Metrics & Acceptance Criteria (High-Level)

### Purpose

To define what “successful delivery” looks like from a business perspective and how benefits realization will be assessed post-implementation.

#### 10.1 Success Indicators

- Reduction in ATP overselling incidents (% SKUs with ATP < 0)
- Improvement in inventory accuracy across fulfillment centers, reflected through improved coverage, turnover, and reduced variance
- Decrease in manual supervisor interventions related to inventory exceptions
- Improved on-time inbound resolution and reduced receiving delays
- Better alignment between inventory levels and demand volatility, without increasing total inventory value.

Detailed acceptance criteria and UAT scenarios will be defined and validated during User Acceptance Testing.