Requirements

Project: Smart Inventory & Demand Forecasting System
Client: Villiers Hardware & Supplies (fictious company)
Prepared By: Procurement & Operations Manager

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1. Background

- They operate a hardware store with about 1800 products, including building materials, tools, electrical components, plumbing items and consumables.
- Their current inventory management is **manual** with (Excel + notebooks).
- This causes: stockouts on fast-moving items, overstocking slow-moving items, delays in reordering, no visibility in future demand, and human errors in counting and recording.
- They need a **reliable software system** to improve how they **track inventory** and **predict shortages**.

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2. High-Level Goals

They want a system that:

- Helps them track products, stocks levels, suppliers, and purchase orders.
- Predicts which items will run out **before** they do.
- Notifies them when they need to reorder.
- Generates simple reports for management.
- Is easy for staff to use with little training.
- Works on a PC and a tablet browser.

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3. Functional Requirements

3.1 Product Management

- The system must be able to add products.
- The system must be able to edit products.
- The system must be able to deactivate products.
- The system must be able to show product details.
- The system must be able to show product history.

3.2 Stock Transactions

- The system must be able to record incoming stock from suppliers.
- The system must be able to record outgoing stock from sales or internal use.
- The system must be able to record stock adjustments (e.g damaged items, shrinkage).
- The system must be able to show stock movement.
- The system must be able to show stock levels.

3.3 Forecasting

- The system must predict stock levels **7-30 days** ahead using past usage.
- The system must forecast per item.
- The system must use **historical sales/usages** to predict future stock.
- The system must highlight items expected to fall below minimum stock.
- The system must display predicted depletion date.
- The system must be able to refresh forecasts manually.

3.4 Notification

- The system must have a dashboard section showing **“Items Low or Soon to be Low”**.
- The system must send email notifications for low stock.
- The system must send email notifications for predicted stockout.
- The system must send email notifications for items not moving for long periods.

3.5 Supplier Management

- The system must be able to add a supplier.
- The system must be able to edit a supplier.
- The system must be able to show a supplier.
- The system must be able to deactivate a supplier.

3.6 Procurement Management

- The system must be able to create a purchase order automatically based on quantity forecasts.
- The system must be able to create a purchase order manually.
- The system must be able to export purchase order to PDF.
- The system must be able to track order status (Pending/Ordered/Delivered).

3.7 Reporting

- The system must be able to show stock valuation.
- The system must be able to show fastest-moving items.
- The system must be able to show slowest-moving items.
- The system must be able to show forecast report (next 7 or 30 days).
- The system must be able to show monthly stock usage.
- The system must be able to show shrinkage/adjustments.
- The system must export the reports as CSV or PDF.

3.8 User Management

- The system must support login for staff and admins.
- The system must support logout for staff and admins.
- The system must be able to create an admin.
- The system must be able to create a staff.
- The system must be able to deactivate an admin.
- The system must be able to deactivate a staff.
- The system must be able to view an admin.
- The system must be able to view a staff.

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4. Non-Functional Requirements

4.1 Ease of Use

- The system should have a simple to use or navigate interface.
- The system should be easy to learn in under 30 minutes.

4.2 Performance

- The system should support approximately 10,000 stock transactions per month.
- The system must load any page in under 2 seconds.

4.3 Security

- The system must support two roles: Admin and Staff.
- The system must allow only Admins to view staff, and admin details.

4.4 Availability

- The system must be up at least 98% of the time.
- The system should work on all major Web browsers, including Chrome, Firefox, Edge and others.

4.5 Scalability

- The system must support up to 50 users.
- The system must support up to 5,000 products.
- The system must support up to 5 years of historical data.

4.6 Backup

- The system must support automatic database backup once per day.

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5. Constraints

- The system must run on **Windows** and **Linux** via web browser.
- The system should not require expensive licenses.
- The system should use a standard database we can maintain (MySQL preferred).
- The system should be deployed on our local server or cloud VPS.

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6. Acceptance Criteria

The system will be considered complete when:

- All features in sections 3 and 4 are implemented.
- Staff can use the system without needing advanced training.
- Forecasting is accurate enough to reduce stockouts by at least 30%.
- Data exports work correctly.
- The system runs reliably for two weeks in production tests.

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7. Deliverables

- Web application
- Source code
- Deployment instructions
- Quick user guide (PDF)
- 1-2 training sessions for staff
