PROJECT MANAGEMENT

Workbook

2025

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Project Description

***Project Description**: Trade Smart – Advanced Goods, Billing, and Distribution Tracker*

The **Trade Smart** system is designed to revolutionize the way shopkeepers manage their inventory, billing, and discount tracking. In traditional retail and distribution, shopkeepers often struggle with **manual bill tracking, inefficient stock management, and difficulty in identifying the best discounts from multiple agencies**. These challenges lead to **missing in profit opportunities, inventory mismanagement, and time-consuming manual processes**.

Trade Smart provides an **automated and intelligent solution** that enables shopkeepers to:

- **Track and manage inventory** in real-time.
- **Compare and apply the best discounts** offered by different suppliers/agencies.
- **Generate and store digital bills/invoices** to improve financial record-keeping.
- **Optimize purchasing decisions** to maximize profit margins.

The system integrates **billing, stock management, and discount optimization** into a single, user-friendly platform, reducing errors, improving efficiency, and boosting profitability.

Project Objectives

1. **Optimize Discount Utilization for Maximum Profit**
    - Automatically compare discounts from different suppliers/agencies.
    - Suggest the best possible purchase options to maximize profit.
2. **Automate Billing & Invoice Management**
    - Provide a **digital billing system** to generate, track, and store invoices.
    - Ensure easy retrieval and management of transaction records.
3. **Enhance Goods & Inventory Management**
    - Enable real-time tracking of stock levels to prevent shortages or overstocking.
    - Provide alerts for **low-stock products** to help in timely restocking.
4. **Simplify Shopkeeper Workflow**
    - Reduce manual workload by automating key processes like **order tracking, bill calculations, and stock monitoring**.
    - Provide an **easy-to-use dashboard** for efficient management.
5. **Improve Decision-Making with Analytics**
    - Generate **sales reports, profit margins, and expense breakdowns**.
    - Help shopkeepers make informed decisions based on **data-driven insights**.
6. **Enhance Business Growth & Profitability**
    - Streamline operations to improve efficiency and reduce financial losses.

- Ensure **transparent financial management** for long-term sustainability.

With **Trade Smart**, shopkeepers can **save time, increase profitability, and manage their business more efficiently** by leveraging **smart automation and real-time data tracking**.

PART B

Initiating Process Group

Introduces you to two PMBOK Processes

a) Create Charter
b) Identify Stakeholders

2.1 PROJECT CHARTER

Project Title	**THE FIGHT FOR CLEAN AIR.**
Organization	TRADE SMART: ADVANCED GOODS, BILLING, AND DISTRIBUTION TRACKER
Start Date.	14 feb 2025
End Date.	20 july 2025
Project. Champion	Gande Nagaraju

Trade Smart is designed to revolutionize **inventory management, billing, and discount tracking** for shopkeepers and small retailers. The system automates the **comparison of discounts from various agencies**, optimizes stock management, and invoice handling to ensure **maximum profit and operational efficiency**.

Through this project, shopkeepers will have access to:

- **Real-time inventory tracking** to prevent overstocking or shortages.
- **Automated billing and invoice management** for seamless financial records.
- **Discount tracking and supplier comparison** to get the best deals.
- **Data analytics and reporting** to improve business decision-making.

This **smart business management solution** reduces manual effort, enhances accuracy, and

boosts overall profitability for shopkeepers.

High level Requirements

1. **Automated Inventory Management System** – Real-time stock monitoring and low-stock alerts.
2. **Billing and Invoice System** – Digital billing, tax calculation, and storage.
3. **Discount Comparison Engine** – Fetching and comparing discounts from suppliers/agencies.
4. **Sales & Expense Analytics Dashboard** – Visual reports for better business insights.
5. **Multi-Platform Support** – Accessible via desktop and mobile applications.

Success Criteria& Who Measures it.

Key Success Indicators

- **Reduction in manual errors** in billing and stock tracking.
- **Increased profit margins** due to optimized supplier discounts.
- **Improved operational efficiency** with faster billing and stock updates.
- **Higher adoption rate** among shopkeepers and retailers.

Evaluation Authorities

- **Retail business owners and shopkeepers** using the system.
- **Local trade and business associations.**
- **Smart Trade Solutions Management Team.**

Stakeholder List

Shopkeepers, Wholesale Suppliers, retail business owners, Billing and accounting professionals, Software developers, Technology providers, Local business regulatory authorities

Project Budget

18,50,000/-RS

Assigned Project Manager, Responsibility and Authority Level

GANDE NAGARAJU is the assigned project manager and will report directly to the **CEO of Smart Trade Solutions**.

- **Budget Authority** – Full access to project funds for approved expenses.
- **Project Oversight** – Responsible for planning, execution, and monitoring of deliverables.
- **Team Coordination** – Managing development, testing, and implementation teams.

Signatures	**CEO of Smart Trade Solutions** & **Head of Operations** **Gande Nagaraju**(Project Manager)

2.2 STAKEHOLDERS

Stakeholder	Role
GANDE NAGARAJU	CEO
TEJA	Project& Operations Manager
Saketh	Sales & outreach Manager

How to Rank the Stakeholders?

1.**High Power, High Interest (Key Decision-Maker – CEO):**

- **Stakeholder:** GANDE NAGARAJU
- **Reason:** Has ultimate authority over budget, goals, and strategic direction. Deeply involved in project outcomes.

2.**High Power, Low Interest (Tharun):**

- **Stakeholder:** Tharun
- **Reason:** Manages project execution and resource allocation but does not directly influence day-to-day user adoption.

3. **Low Power, Low Interest (Marketing Manager):**

- **Stakeholder:** Saketh
- **Reason:** Involved in promoting the system but does not significantly impact development

Planning Process Group

2.4 Collect Requirements Process

S. No.	Requirement Type	Description	Method Used for Collection	Stakeholders Involved
1	Functional Requirements	Features like billing, discount calculation, inventory updates	Team brainstorming, interviews	Project Manager, Software Dev Lead
2	Non-Functional Requirements	Performance, security, scalability, and usability	Research, standards review	QA Engineer, Security Analyst, UI/UX Designer
3	Technical Requirements	Tech stack (React, Node.js, MongoDB, etc.), hosting, API specs	Team discussion, tech feasibility check	Software Dev Lead, DBA
4	Business Requirements	Profit calculation, shopkeeper integration, vendor-based discount system	Discussion with mentors, case studies	Project Manager, Sponsors
5	User Requirements	Ease of use for shopkeepers, mobile responsiveness, dashboard navigation	Surveys, prototyping feedback	UI/UX Designer, Shopkeeper representatives
6	Security Requirements	Role-based access control (RBAC), data encryption, secure login	Risk assessment, expert consultation	Security Analyst, Project Manager

Requirement Document

2.5 Project Scope Statement

PROJECT OBJECTIVE
The objective of the **Trade Smart** project is to develop an advanced **goods, billing, and distribution tracking system** that helps shopkeepers **maximize their profits** by availing discounts from various agencies and efficiently tracking their **bills, stock, and distribution processes**. This system aims to **reduce manual errors**, streamline transactions, and improve overall **business**

efficiency.

DELIVERABLES

The system will provide the following key deliverables:

- A **user-friendly digital platform** to manage goods, billing, and distribution.
- An **automated discount calculation module** to ensure maximum profit for shopkeepers.
- A **bill tracking and financial summary feature** for easy accounting and transaction tracking.
- A **database-driven backend** to securely store billing, stock, and agency discount data.
- A **mobile and web interface** for accessibility and real-time tracking.
- **Security features** to prevent unauthorized access and ensure data integrity.

TECHNICAL REQUIREMENTS

The **Trade Smart** system will incorporate the following technical components:

- **Cloud-based data storage** for secure and scalable access.
- **Automated discount comparison algorithm** to optimize purchase decisions.
- **Barcode/QR Code Scanner Integration** for quick and error-free data entry.
- **Secure Payment Gateway Integration** for seamless transactions.
- **Real-time notification system** for bill alerts, stock updates, and agency offers.
- **Multi-user access control** with role-based permissions for shopkeepers and employees.
- **Data Analytics Dashboard** for business insights, profit tracking, and decisions.

LIMITS AND EXCLUSIONS (Constraints)

- The system will primarily be designed for **small and medium-sized businesses**.
- It will **not cover large-scale warehouse management** beyond a certain stock capacity.
- Initial deployment will be **limited to specific regions** before expanding further.
- The system **does not handle logistics and physical transportation** of goods.
- Development will focus on **cost-effectiveness** while maintaining essential features.

RISKS

- **Data Security Risks**: Risk of cyber threats or unauthorized access.
- **System Downtime**: Server failures or software bugs leading to temporary system unavailability.
- **User Adaptation Challenges**: Some shopkeepers may find it difficult to transition from manual to automated tracking.
- **Integration Risks**: Compatibility issues with third-party payment gateways or existing POS systems.

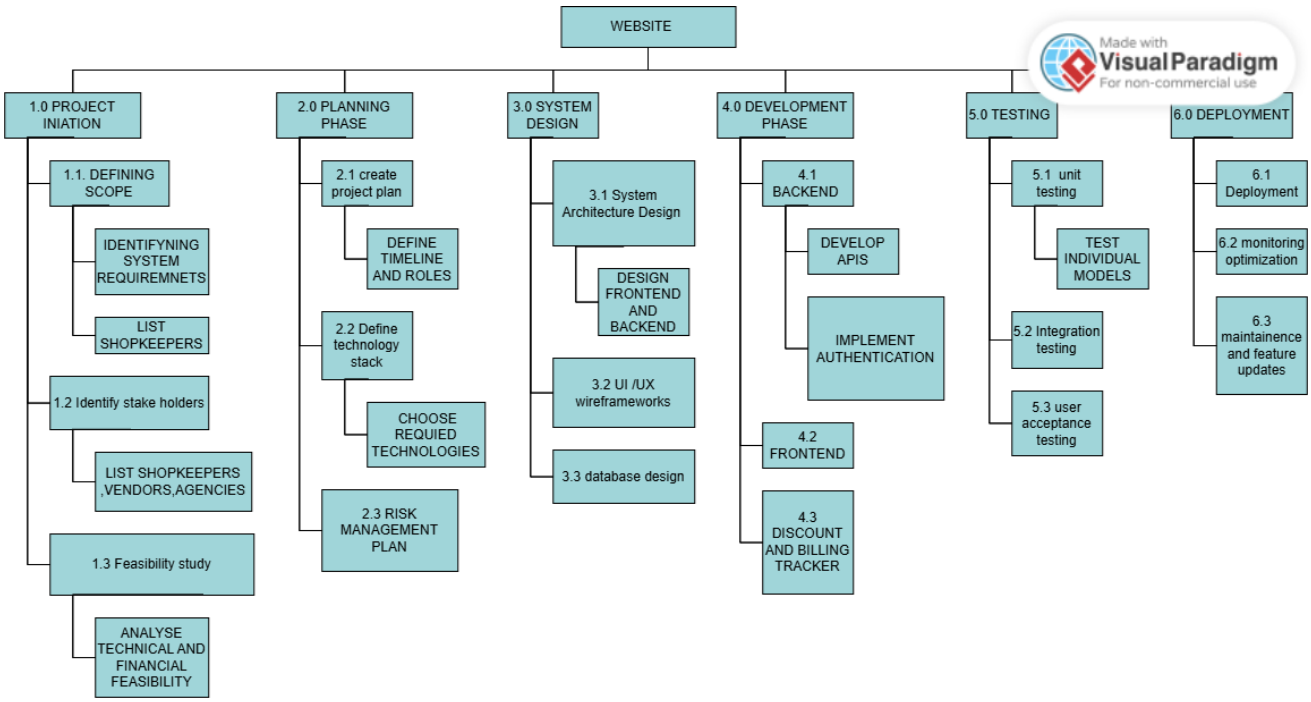
ACCEPTANCE CRITERIA

1.Ease of use: Shopkeepers can easily navigate and utilize the platform.
2.Efficiency: Transactions and billing processes are completed 30% faster compared to manual methods.
3.Data Accuracy: The system accurately calculates discounts and prevents manual calculation errors.
4.Reliability: Uptime of 99% or higher, ensuring continuous business operations.
5.Positive user feedback: At least 80% of early users should find the system beneficial in improving their profits**.**

Signatures

GANDE NAGARAJU

2.6 WORK BREAKDOWN STRUCTURE (WBS)



2.7 MILESTONE.

S. No.	Milestone	Start Date	End Date	Expected Duration	Remarks
1	Requirement Collection & Finalization	14-Feb-2025	20-Feb-2025	7 days	Collected all functional & technical requirements
2	UI/UX Design Completion	21-Feb-2025	28-Feb-2025	8 days	Design of pages, dashboard, and workflow screens
3	Frontend Development	01-Mar-2025	20-Mar-2025	20 days	React-based frontend creation and testing
4	Backend Development & DB Integration	21-Mar-2025	10-Apr-2025	21 days	APIs, database, and business logic development
5	Discount & Billing Logic Implementation	11-Apr-2025	25-Apr-2025	15 days	Integration of trade discount and profit logic

6	Testing & Debugging Phase	26-Apr-2025	15-May-2025	20 days	Unit and integration testing of all modules
7	Deployment & Hosting	16-May-2025	25-May-2025	10 days	Cloud hosting and backend deployment
8	Documentation & Final Report	26-May-2025	10-Jun-2025	16 days	Preparing user manual and technical documentation
9	Final Demo & Evaluation	11-Jun-2025	20-Jul-2025	40 days	Buffer, viva presentation, and external evaluation

DEFINE AND ESTIMATE ACTIVITIES AND RESOURCES

2.8 Activity List

Activities	Effort	Resource
System Architecture Design	High	Software Engineers
Backend API Development	High	Backend Developers
Frontend Development	Medium	UI/UX Designers, Developers
Database Setup	High	Database Administrators
Discount and Billing Algorithm	High	Software Developers
Security Implementation (Authentication)	High	Cybersecurity Experts
Testing (Unit, Integration, UAT)	Medium	Test Engineers
Deployment and Maintenance	Low	DevOps Engineers

2.9 Activity Durations

Activity	Duration (days)
Requirements Gathering	7
System Architecture & Planning	10
Backend Development	15
Frontend Development	12
Database Integration	8
Testing	10

Deployment & Optimization	5

2.10 DELIVERABLES LIST

Project Deliverables

#	Deliverable	Description
1	**Project Scope Statement**	Defines objectives, boundaries, and expected outputs, including billing, inventory, discount tracking, and shopkeeper profit maximization. Covers in-scope and out-of-scope features.
2	**Cost and Schedule Estimation**	Provides a breakdown of project costs (personnel, tools, infrastructure) and a comprehensive timeline with key phases and milestones.
3	**Work Breakdown Structure (WBS)**	Outlines project tasks hierarchically, linking them to roles, timelines, and dependencies for smooth execution. Covers research, design, development, testing, and deployment.
4	**Risk and Resource Management Plan**	Identifies potential risks, their impact, likelihood, and mitigation strategies. Includes a resource allocation plan optimizing human resources, tools, and technologies.
5	**Quality Assurance and Communication Plan**	Combines QA standards and testing procedures to ensure deliverable quality, along with communication strategies for meetings, updates, and stakeholder engagement.
6	**Documentation and Success Metrics**	Plans for user manuals, technical documentation, and project reports. Defines measurable outcomes like profit optimization, workload reduction, and user satisfaction.

Technical Deliverables

Deliverable	Description
System Architecture	High-level diagram detailing billing, inventory, discount tracking, and distribution modules.
Database Design	ERD and schema optimization for fast data processing.
Backend Services	APIs for shopkeeper transactions, inventory, and discount management.
Frontend Features	Responsive dashboard, billing UI, profit tracking, and notifications.
Security and Privacy	Data encryption, role-based access control, and GDPR compliance.
Notification System	Automated alerts for low stock, new discounts, and pending payments.
Integration	Third-party APIs for payment gateways, agency discounts, and logistics.
Testing Framework	Unit, integration, and performance testing to ensure robust functionality.
Deployment and Monitoring	Cloud deployment, CI/CD pipeline setup, and performance tracking tools.

Plan Deliverables

Team (Work Resource)	Activities (List Key Deliverables Only)
Team 1	1. Cleaning system development 2. Implementing automation for shopkeepers
Team 2	1. Goods tracking mechanism 2. Integration with agency discounts
Team 3	1. Inventory & billing workflow 2. Deployment and testing
Team 4	1. Data encryption & security implementation 2. User training documentation

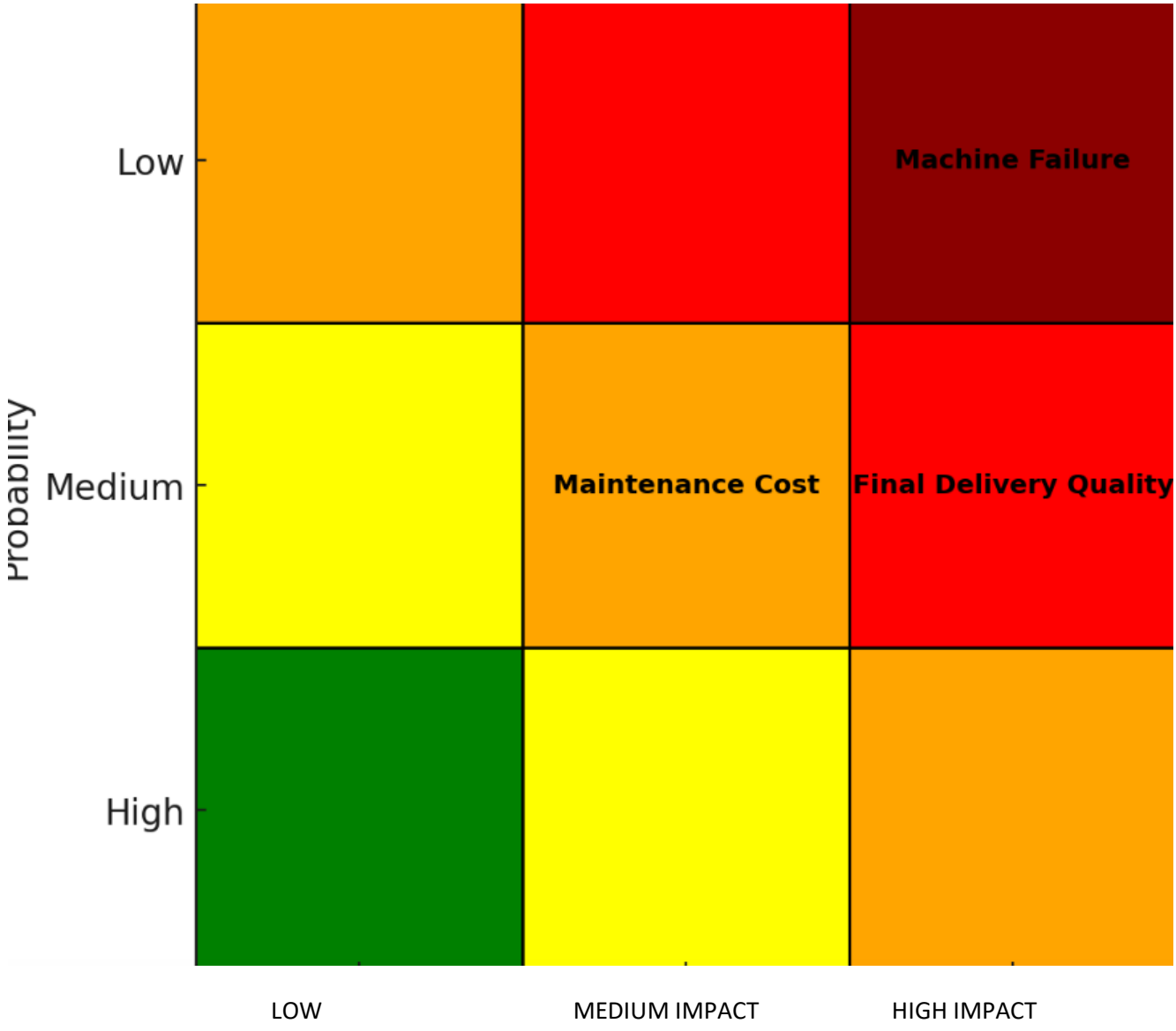
Design Deliverables

Deliverable	Description
1. System Architecture	High-level design for modules: billing, inventory, discount tracking, and profit analysis.
2. Data Flow Diagram (DFD)	Visualization of workflows for transactions, billing, and discount approvals.
3. UI/UX Design	Wireframes for shopkeeper dashboard, billing, inventory, and reporting system. Interactive prototypes showcasing workflows. Style guide defining typography, colours, and UI components.
4. Discount Engine Design	Logic for fetching, comparing, and prioritizing discounts to maximize shopkeeper profit.
5. Billing and Notification Workflow	Invoice generation, tax calculations, and real-time notifications for payments.
6. API Design Specifications	RESTful endpoints for: - Adding and fetching goods. - Retrieving discounts and profit calculations. - Invoice creation and tracking.
7. Security and Privacy Plan	Encryption strategies, secure API access, and role-based authentication.
8. Technology Stack Decision	Selection of frameworks and tools for frontend, backend, and database management.
9. Testing Plans	Procedures for usability testing, system integration, and performance validation.

2.12 RISK MANAGEMENT PLAN

Risk	Type of Risk (Good/Bad)	Consequence or Impact
System Risks		
Server Downtime	Bad	Customer dissatisfaction, loss of trust
Data Breach	Bad	Legal and reputational damage
API Latency	Bad	Slows down billing and inventory processes
Scalability Issues	Bad	Poor performance as the user base grows
Financial Risks		
Incorrect Discount Calculations	Bad	Shopkeepers may face financial losses
High Maintenance Costs	Bad	Affects long-term investment sustainability
Regulatory Compliance	Bad	Legal penalties due to non-compliance
Operational Risks		
User Adoption Challenges	Bad	Shopkeepers may struggle to use the system
Integration Issues	Bad	Errors in vendor discount updates
Market Risks		
Competitor Platforms	Bad	Loss of users to more advanced platforms
Business Expansion Opportunity	Good	More vendors and increased profits
Advanced Analytics Implementation	Good	Improves shopkeeper decision-making

RISK ASSESSMENT MATRIX



2.14 Plan Quality Management

Plan Quality

Quality Roles and Responsibilities

Role	Responsibility
Project Manager	Oversees overall system quality, ensures compliance with requirements.
Software Development Lead	Ensures code quality, performance optimization, and security implementation.
UI/UX Designer	Maintains an intuitive and visually appealing user interface.
QA Engineer	Conducts testing (unit, integration, and performance) to validate system reliability.
Security Analyst	Implements encryption, RBAC, and API security checks.
Database Administrator	Optimizes database schema and ensures data integrity.

2.15 Quality Management Plan

Summarizes the previous Section

Quality Management Plan

Project Title:	**TRADE SMART -ADVANCES GOODS, BILLING, DISTRIBUTION TRACKER**	**Version:**	**1.0**	**Date:**	**14-feb2025** **20-jul2025**

Overview: Quality is a crucial aspect of the Trade Smart project. The system's accuracy, reliability, and efficiency in billing, inventory, and discount tracking are regularly monitored. The quality of APIs, data processing, and UI/UX components is assessed by the project manager and technical leads to ensure optimal performance.

Quality Responsibilities and Quality Roles: Quality is monitored and maintained by the Project Manager and Development Team, ensuring that all features work as expected. These responsibilities are managed by the project lead.

Quality Assurance Approach: We ensure quality in Trade Smart through:

✓ Code Reviews – Regular peer reviews to maintain clean and efficient code.

✓ Automated and Manual Testing – Unit, integration, and performance tests.

✓ Security Audits – Ensuring data encryption, role-based access control, and API security compliance.

✓ User Experience Testing – Checking for ease of use, accessibility, and responsiveness.

Quality Control Approach: System Modules Testing – Continuous validation of billing, discount calculations, and inventory tracking.

1.Database Performance Checks – Ensuring data integrity and optimization.

2. Third-Party API Quality Monitoring – Regular assessment of logistics, payment, and discount provider integrations.

3. Bug Tracking and Resolution – Logging issues and ensuring timely fixes before deployment**.**

Quality Reporting Plan:

1. Daily Logs – Tracking system performance and bug reports.

2. Weekly Reports – Reviewing API responses, security compliance, and system optimizations.

3. Monthly Review Meetings – Assessing overall system quality, implementing feedback, and ensuring continuous improvement.

2.16 Develop Human Resources Plan

Human Resources Plan

Project Title:	**TRADE SMART -ADVANCES GOODS, BILLING, DISTRIBUTION TRACKER**	**Version:**	**1.0**	**Date:**	**14-feb2025** **20-jul2025**

Roles and Responsibilities:

1.Project Manager – Oversees project execution, monitors progress, and ensures timely delivery.

2.Software Developers – Develop and maintain the billing and inventory management system**.**

3. Quality Assurance Engineers – Test and verify system functionality, security, and performance.

4.UI/UX Designers – Design an intuitive and user-friendly interface for shopkeepers**.**

5. Database Administrators – Manage and optimize data storage, ensuring smooth operations**.**

6. Technical Support Team – Assist users, troubleshoot system issues, and provide guidance.

Staff Acquisition:

1.Hiring Process: Developers, testers, and designers are selected based on technical skills, experience, and ability to work in agile development.

2.Onboarding: All new hires undergo an orientation to understand the project scope, technology stack, and business requirements.

Staff Release:

1.Project Completion: Staff may be reassigned to other projects or released based on contract terms.

2.Performance-Based Release: If employees fail to meet expectations after training and review, their roles may be adjusted or replaced.

Training:

Training is provided by the company in advance and we act very professionally and in a dignified manner

Performance Reviews: performance is reviewed by TEJA(project manager) and necessary improvements are made to make our service more reliable

Regulation and Policy Compliance:

1.Ensuring compliance with data protection laws, software licensing policies, and business regulations.

2.Adherence to industry standards for software security, financial transactions, and user data privacy.

2.17 Equipment and Resources:

Item	Description
Development Machines	High-performance computers for coding, testing, and deployment.
Software Tools	IDEs, API testing tools, database management systems, and debugging software.
Cloud Infrastructure	Servers and cloud services for hosting and data storage.
Testing Devices	Various devices (PCs, tablets, mobile phones) for UI/UX testing.

2.18 Communication Plan Details

Message	Description (What is it about?)	Report to	Method (How are you communicating?)	Frequency (When and how frequently?)	Sender (Who is sending it?)
Project Progress	Status updates on development, testing, and deployment	Project Manager	Email, Project Management Tool (e.g., Jira, Trello)	Weekly	Development Team
System Performance	Reports on system stability, speed, and bug tracking	Project Manager, QA Team	Automated Reports, Team Meetings	Bi-weekly	QA Engineers
Billing & Transactions	Updates on financial records and customer payments	Finance Department	Accounting Software, Email	Daily	Finance Team
Customer Support	Issues reported by users and resolutions	Support Team Lead	Ticketing System, Email	As needed	Customer Support Team
Data Security & Compliance	Ensuring system meets legal and security standards	Compliance Officer, Management	Security Audits, Compliance Reports	Monthly	Security Team
Vendor Coordination	Updates on software tools, licenses, and third-party services	Vendor Manager	Email, Video Calls	As needed	Procurement Team
Bug Fixes & Enhancements	Updates on software patches and new features	Development Team	Internal Documentation, GitHub Issues	As needed	Developers

2.19 COST ESTIMATION

Category	Estimated Cost (INR)
Development Costs	
User Interface & Dashboard	**₹4,50,000**
Backend Development (Database, APIs)	**₹6,00,000**
Discount & Profit Calculation System	**₹2,50,000**
Security & Data Encryption	**₹1,75,000**
Operational Costs	
Cloud Storage & Hosting (1 year)	**₹1,50,000**
Software & Tools (APIs, Third-Party)	**₹4,00,000**
Licensing, Security, and Maintenance	**₹3,00,000**
Human Resources	**₹9,50,000**
Marketing & Outreach	**₹2,00,000**
Total Estimated Cost	**₹18,50,000 (~₹18.5 Lakhs)**

2.20 Project Summary

Performance Indicators – Trade Smart Project

Performance Indicator	Planned
Total Effort	**1400 Hours**
Total Duration	**60 Days**
Start Date	**14 February 2025**
End Date	**20 July 2025**
Cost	**₹45,000**

Risk Monitoring and Control

Updated Risk Register

Risk ID	Risk	Risk Response	Resource Responsible for Mitigation	Current Risk Status
1	**System Malfunction**	Ensure regular system maintenance and updates	Technical Support Team	System stable
2	**Budget Overrun**	Optimize resource allocation and track expenses	Finance Manager	Within limits
3	**Delays in Vendor Coordination**	Improve vendor communication and set clear timelines	Vendor Manager	Vendors on schedule
4	**Data Security Breach**	Implement security protocols and regular audits	Security & IT Team	Secure
5	**Customer Service Issues**	Enhance support team training and feedback system	Customer Support Lead	Improved response time

Monitor & Control Plan

Focus Area	How We'll Track It	How Often	Who's Responsible
Task Completion	Trello / Jira project board	Weekly	Project Manager
Budget	Expense tracker + monthly budget review	Bi-weekly	Finance Manager
Timeline	Gantt chart and timeline check-ins	Weekly	PM & Dev Team
Bugs & Issues	Bug log, test reports	Ongoing	QA Engineers
Risk Management	Risk register + quick syncs	Weekly	Project Manager
System Performance	Uptime monitor, server logs	Daily	DevOps Team
User Experience	Feedback forms, support tickets	Post-release	Customer Support

Report	What's Inside	When	Who Gets It
Weekly Snapshot	Tasks done, blockers, and help needed	Weekly	Team + Project Manager
Budget Overview	Spending vs. plan, any red flags	Bi-weekly	Finance + CEO
Testing Updates	Bugs found, fixed, and feature test updates	Per module	QA + Dev Team
Monthly Check-in	Overall status, wins, and user feedback summary	Monthly	Stakeholders
Final Wrap-up	Highlights, lessons learned, and next steps	End of Project	Entire Team