## 1. Business Case Document

|  |  |
| --- | --- |
| BUSINESS CASE DOCUMENT | |
| OBJECITVE/ AIM | To design a system to manage the ordering, arranging and selling goods. |
| CURRENT ISSUES | Supplying goods is manual leading to errors.  Difficulties in handling third-party services directly. |
| DESIRED OUTPUT | Automating bill processes, better inventory management i.e, managing of availability of goods and streamlined payment options. |
| RESOURCES REQUIRED | Project team members from the client community. Information technology services(ITS) staff. |
| CHANGES REQUIRED | Automate key retail operation, improve inventory management.  Offering multiple payment options. |
| TIME FRAME TO RECOVER ROI | 18 months |
| 0STAKEHOLDERS IDENTIFICATION | List out stakeholders and RACI MATRIX depending on functionalities, phases and process. |
| PROBLEMS SOLVED | Automate operations, offering multiple payment options, reducing system downtime. |

## 2. Business Analyst Approach Strategy

**1. Project Initiation**

* **Understand Project Scope:** Define the project's objectives, deliverables, and constraints.
* **Stakeholder Identification:** Identify key stakeholders (e.g., project sponsor, retail store managers, IT team).
* **Establish Communication Channels:** Set up regular meetings, emails, and a collaborative workspace (e.g., Microsoft Teams).

**2. Elicitation Techniques**

* **Interviews:** Conduct one-on-one or group interviews with stakeholders.
* **Surveys/Questionnaires:** Distribute surveys to gather quantitative data.
* **Workshops:** Organize workshops to brainstorm and gather requirements collaboratively.
* **Observation:** Observe retail store operations to understand workflows.
* **Document Analysis:** Review existing documentation, system manuals, and reports.

**3. Stakeholder Analysis**

* **RACI Matrix:** Determine Responsibility, Accountability, Consultation, and Information roles for each stakeholder.
* **Influence/Interest Matrix (ILS):** Analyze stakeholders based on their influence and interest in the project.

**4. Documentation**

* **Business Requirements Document (BRD):** Capture the high-level business requirements.
* **Functional Requirements Document (FRD):** Detail functional requirements based on business needs.
* **Use Cases/User Stories:** Describe specific scenarios and interactions.
* **Traceability Matrix:** Map requirements to ensure each one is addressed in the solution.

**5. Process for Document Sign-Off**

* **Draft Documents:** Create initial drafts of the BRD, FRD, and other relevant documents.
* **Review Cycle:** Share drafts with stakeholders for feedback and conduct review meetings.
* **Approval Process:** Incorporate feedback and get formal sign-off from key stakeholders.

**6. Client Approvals**

* **Milestone Approvals:** Seek client approval at key project milestones.
* **Feedback Loop:** Establish a process for continuous feedback and approval during project iterations.

**7. Communication Channels**

* **Regular Updates:** Provide weekly or bi-weekly progress reports.
* **Status Meetings:** Hold regular status meetings with stakeholders.
* **Collaboration Tools:** Use tools like Microsoft Teams etc for ongoing communication.

**8. Handling Change Requests**

* **Change Control Process:** Define a process for submitting, reviewing, and approving change requests.
* **Impact Analysis:** Assess the impact of proposed changes on project scope, timeline, and budget.
* **Documentation:** Update project documents to reflect approved changes.

**9. Progress Updates**

* **Project Dashboard:** Create a project dashboard to track progress and key metrics.
* **Progress Reports:** Send regular progress reports to stakeholders.
* **Review Meetings:** Conduct periodic review meetings to discuss progress and address any issues.

**10. User Acceptance Testing (UAT)**

* **UAT Planning:** Develop a UAT plan outlining test cases, scenarios, and acceptance criteria.
* **Conduct UAT:** Facilitate UAT sessions with end-users and stakeholders.
* **UAT Sign-Off:** Collect feedback, resolve any issues, and obtain formal sign-off from the client.

## 3. Functional specifications

|  |  |
| --- | --- |
| Project Name | Retail store management |
| Customer Name | Sunil |
| Project Version | RSM2.0 |
| Project sponsor | Sunil |
| Project Manager | Susheel |
| Project Initiation date | 1/01/2025 |

Functional Requirements Specifications

|  |  |  |  |
| --- | --- | --- | --- |
| **S.NO** | **FR-CODE** | **REQUIREMENT** | **DESCRIPTION** |
| 1 | FR-0001 | Login/Registration | New user has to register first and then login to bill any product. |
| 2 | FR-0002 | Browse | User should be allowed to browse products in the category they choose. |
| 3 | FR-0003 | Add to cart | User has to add the product to cart, if they want to choose any other category item and add if they want |
| 4 | FR-0004 | Billing | The total amount is informed to the customer. |
| 5 | FR-0005 | Payment through Card | Allowing the customer of preferable payment method like debit/ credit card. |
| 6 | FR-0006 | Payment through UPI | Allowing customer to pay via qr code to pay through upi. |
| 7 | FR-0007 | Payment via cash | Allowing customer to pay via cash. |
| 8 | FR-0008 | Recommendations | While billing the products, customers might be allowed to view some products related to the chosen item, they will take a look if they want to. |
| 9 | FR-0009 | Coupons/ discount | Check with the customers if there are any coupons or let them know about the discount if there are any |
| 10 | FR-0010 | Print acknowledgement | Customers are given print receipt after payment after getting billed. |
| 11 | FR-0011 | Refilling stock | checking upon stock to refill them in case of shortage/ requirement |

## 4. Requirement Traceability Matrix

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.NO** | **REQUIREMENT ID** | **REQUIREMENT NAME** | **REQUIREMENT DESCRIPTION** | DESIGN | D1 | T1 | D2 | T2 | UAT |
| 1 | FR-0001 | Login/Registration | New user has to register first and then login to bill any product. | Yes | Yes | Yes | Yes | Yes | Yes |
| 2 | FR-0002 | Browse | User should be allowed to browse products in the category they choose. | Yes | Yes | Yes | Yes | Yes | Yes |
| 3 | FR-0003 | Add to cart | User has to add the product to cart, if they want to choose any other category item and add if they want | Yes | Yes | Yes | Yes | Yes | Yes |
| 4 | FR-0004 | Billing | The total amount is informed to the customer. | Yes | Yes | Yes | Yes | Yes | Yes |
| 5 | FR-0005 | Payment through Card | Allowing the customer of preferable payment method like debit/ credit card. | Yes | Yes | Yes | Yes | Yes | Yes |
| 6 | FR-0006 | Payment through UPI | Allowing customer to pay via qr code to pay through upi. | Yes | Yes | Yes | Yes | Yes | Yes |
| 7 | FR-0007 | Payment via cash | Allowing customer to pay via cash. | Yes | Yes | Yes | Yes | Yes | Yes |
| 8 | FR-0008 | Recommendations | While billing the products, customers might be allowed to view some products related to the chosen item, they will take a look if they want to. | Yes | Yes | Yes | Yes | Yes | Yes |
| 9 | FR-0009 | Coupons/ discount | Check with the customers if there are any coupons or let them know about the discount if there are any | Yes | Yes | Yes | Yes | Yes | Yes |
| 10 | FR-0010 | Print acknowledgement | Customers are given print receipt after payment after getting billed. | Yes | Yes | Yes | Yes | Yes | Yes |
| 11 | FR-0011 | Refilling stock | checking upon stock to refill them in case of shortage/ requirement | Yes | Yes | Yes | Yes | Yes | Yes |

## 5. **Business Requirement Document**

Retail store management  
version 2.0

**1. Documents revision**

|  |  |  |  |
| --- | --- | --- | --- |
| Date | Version Number | | Document changes |
| 5/01/2025 | 0.1 | | Initial draft |
| 10/01/2025 | 0.2 | | Revised documents- **BRD** i.e, redefine the existing one. **Functional**- changes aligned with updated business requirements.  **Non-functional**-Adjustment n performance, scalability etc based on additional stakeholder input. |
| 20/01/2025 | 0.4 | | **Design phase**-Revisions occurred due to the design update to better meet requirements or resolve technical constraints |
| 27/01/2025 | 0.8 | | **Development Phase: Traceability Matrix:**  Updated to reflect changes in the mapping of requirements to design, development, or test cases. |
| 16/02/2025 | 1.0 | | **Testing Phase: Test Plan:**  Revisions required because of the testing strategy are updated due to additional test cases inclusion.  **Test Case Documents:**  Refined to cover newly discovered scenarios or overlooked requirements.  **Bug Reports:**  Continuously updated during the testing process. |
| 25/02/2025 | 1.4 | | **Deployment Phase:**  **Operational Manual:**  Updated to reflect the final functionality and any changes made during development/testing.  **Training Materials:**  Adjusted based on updates to the system features or workflows.  **UAT Plan and Reports:**  Revisions might occur during User Acceptance Testing to address feedback from end-users. |
| 01/03/2025 | | 1.8 | **Maintenance Phase: Maintenance and Support Documents:**  Updated with logs or changes implemented post-deployment.  **Change Request Log:**  Maintained and updated with approved modifications or enhancements. |
| 04/03/2025 | | 2.0 | **Final draft** |

**2. Approvals**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **ROLE** | **NAME** | **TITLE** | | **SIGNATURE** | **DATE** |
| Project Sponsor | Sunil | Mr | | yes | 01/01/2025 |
| Business Owner | Mark | Mr | | yes | 01/01/2025 |
| Project Manager | Susheel | Mr | | yes | 01/01/2025 |
| System Architect | Varun | Mr | | yes | 01/02/2025 |
| Development Lead | Kranthi | Mr | | yes | 25/02/2025 |
| User Experience Lead | Chandrarekha | Mrs | | yes | 26/02/2025 |
| Quality Lead | Arun | Mr | | yes | 27/02/2025 |
| Content Lead | Mike | | Mr | yes | 28/02/2025 |

**3. RACI chart**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Position | Name | | \* | R | | A | S | | C | I | |
| Business Owner | Mark | | Yes | Yes | | Yes |  | |  | yes | |
| Project Sponsor | Sunil | | Yes | yes | |  |  | |  | yes | |
| Project Manager | Susheel | | Yes | Yes | | Yes | Yes | | Yes | yes | |
| System Architect | Varun | |  |  | | yes | yes | | yes |  | |
| Development Lead | Kranthi | |  | yes | | yes |  | | yes |  | |
| Business analyst | | Abhishek |  | | Yes | Yes | | Yes | Yes | | Yes |

**4.Introduction**

**4.1 Business Goals**

* Enhance Efficiency: Automate key retail operations to save time and reduce manual errors.
* Improve Inventory Management: Ensure accurate tracking of goods and timely restocking.
* Streamline Product Arrangement: Organize products by price or category for easier management and customer navigation.
* Facilitate Sales Transactions: Simplify the process of generating bills and processing sales.
* Offer Flexible Payment Options: Accept payments via credit card or cash to accommodate customer preferences.
* Boost Customer Satisfaction: Provide a seamless shopping experience with faster transactions and better service.

**4.2 Business objectives**

**Solution Selection**: Choose the most suitable solution based on design criteria, specifications, and requirements.

**Solution Prototyping and Testing**: Develop prototypes and conduct thorough testing to ensure the solution meets all functional and non-functional requirements.

**System Integration**: Integrate the selected solution with existing systems and processes to ensure seamless operation.

**User Training and Support**: Provide comprehensive training and ongoing support to users to ensure effective utilization of the system.

**Performance Monitoring and Optimization**: Continuously monitor system performance and make necessary optimizations to maintain efficiency and effectiveness.

### 4.3 Business Rules Inventory Management

1. Maintain minimum stock levels for each product to avoid shortages.
2. Automatically reorder products when stock reaches a predefined threshold.
3. Categorize products for efficient tracking (e.g., perishable, non-perishable, seasonal).
4. Assign unique SKUs (Stock Keeping Units) to all products for accurate identification.

### Sales and Discounts

1. Apply promotional discounts only within the specified time frames.
2. Prevent stacking of multiple discounts unless explicitly allowed.
3. Enforce price consistency across all outlets, unless localized pricing is defined.
4. Record all sales transactions in real-time for accurate reporting.

### Customer Management

1. Implement a loyalty program to reward repeat customers with points or discounts.
2. Store and protect customer data in compliance with data privacy regulations (e.g., GDPR or local data protection laws).
3. Offer personalized promotions based on customer purchase history.

### Employee Management

1. Restrict employee access to specific system modules based on their roles (e.g., cashier, manager).
2. Track employee performance metrics such as sales completed, hours worked, and error rates.

### Payment and Transactions

1. Accept multiple payment methods (e.g., cash, card, digital wallets).
2. Ensure receipts are generated for every transaction, including refunds and exchanges.
3. Maintain a clear return and refund policy and apply it uniformly.

### Reporting and Analytics

1. Generate daily, weekly, and monthly sales and inventory reports for management.
2. Track key performance indicators (KPIs) like sales trends, footfall, and conversion rates.

### Compliance and Security

1. Enforce compliance with tax regulations by integrating accurate tax calculations.
2. Implement data encryption and user authentication to protect sensitive business information.

### 4.4 project background History and Proposal

Traditionally, managing a retail store involved manual processes for tasks such as inventory tracking, sales recording, and customer management. As the retail landscape grew more competitive and customer expectations evolved, these manual methods became unsustainable. Rising operational costs, human errors, and a lack of real-time data became critical pain points for retailers.

The idea to automate and optimize retail store management processes was proposed as a way to overcome these challenges. With advancements in technology, software solutions emerged to centralize and streamline various aspects of retail operations, making store management more efficient and scalable.

### Business Issues Identified

1. **Inventory Mismanagement**: Overstocking and understocking issues caused financial losses and customer dissatisfaction.
2. **Inefficient Sales Tracking**: Inconsistent or inaccurate sales records hindered decision-making and performance analysis.
3. **Customer Retention**: Difficulty in tracking and understanding customer behavior led to a loss of repeat business.
4. **Operational Inefficiencies**: Time-consuming manual processes reduced productivity and left room for errors.
5. **Compliance Risks**: Failure to comply with tax regulations or data protection laws posed legal and financial risks.

### Expected Benefits

By implementing a retail store management project, businesses could expect:

1. **Improved Inventory Control**: Real-time stock tracking minimized shortages and excesses, reducing waste and costs.
2. **Enhanced Sales Insights**: Centralized data provided valuable analytics to improve decision-making and strategy.
3. **Better Customer Experience**: Loyalty programs and personalized promotions fostered customer retention and satisfaction.
4. **Operational Efficiency**: Automation reduced manual workload, improved accuracy, and saved time.
5. **Regulatory Compliance**: Integrated tax and data security features ensured adherence to regulations

### 4.5 Project objective 1. ****Seamless System Integration****

* Develop a system that integrates inventory, sales, customer, and employee management into a single platform.
* Ensure compatibility with existing infrastructure and third-party tools like accounting software or payment gateways.

### 2. ****Accuracy and Real-Time Data****

* Provide real-time updates for inventory levels, sales transactions, and customer profiles.
* Eliminate manual errors by automating repetitive tasks.

### 3. ****User-Friendly Interface****

* Build an intuitive system interface for employees of varying technical expertise to reduce training time.
* Ensure that both back-end operations (e.g., inventory tracking) and front-end processes (e.g., billing) are easy to navigate.

### 4. ****Customer-Centric Features****

* Enable the system to manage loyalty programs, personalized promotions, and feedback collection.
* Improve the shopping experience through quicker checkouts and accurate information on product availability.

### 5. ****Streamlined Inventory Management****

* Automate stock replenishment processes based on predefined thresholds.
* Provide alerts for low stock, slow-moving inventory, or approaching expiration dates.

### 6. ****Scalable and Flexible Architecture****

* Design the system to scale with the business as it grows in terms of outlets, product range, or customer base.
* Ensure the flexibility to accommodate future technological upgrades or market demands.

### 7. ****Comprehensive Reporting and Analytics****

* Generate actionable reports on sales trends, inventory performance, and customer behavior.
* Provide insights to aid strategic decision-making and forecasting.

### 8. ****Enhanced Security and Compliance****

* Implement robust data security protocols to protect business and customer information.
* Ensure compliance with all relevant legal and tax regulations.

### 9. ****Operational Efficiency****

* Automate routine administrative tasks like sales recording, billing, and employee performance tracking.
* Reduce the time spent on manual processes, allowing employees to focus on customer engagement.

### 10. ****Cost Reduction****

* Minimize losses due to inventory mismanagement and human errors.
* Optimize labor costs by automating repetitive tasks and improving overall productivity.

### 4.6 Project scope 1. ****Inventory Management****

* Automated stock tracking, including real-time updates on inventory levels.
* Reorder point automation to ensure timely restocking and avoid stockouts.
* Integration with barcode or RFID scanning for efficient inventory handling.

### 2. ****Sales and Point of Sale (POS)****

* Automated sales processing with quick and accurate billing.
* Integration of multiple payment methods, including digital wallets and credit/debit cards.
* Sales data recording and reconciliation in real-time for enhanced accuracy.

### 3. ****Customer Relationship Management (CRM)****

* Automation of loyalty programs to track and reward repeat customers.
* Personalized marketing and promotions based on purchase behavior analytics.
* Automated customer feedback collection and analysis for service improvement.

### 4. ****Employee and Task Management****

* Role-based system access to enhance security and workflow efficiency.
* Automated shift scheduling and performance tracking for employees.
* Centralized management of employee tasks and activities.

### 5. ****Reporting and Analytics****

* Automated generation of sales, inventory, and customer reports at regular intervals.
* Advanced analytics for trend forecasting and performance measurement.
* Visual dashboards to track key performance indicators (KPIs) in real-time.

### 6. ****Compliance and Security****

* Automated tax calculations and compliance with regulatory requirements.
* Secure handling of customer data through encryption and restricted access.
* Audit trails to monitor and track system usage.

### 7. ****Omnichannel Retail****

* Integration of online and offline sales channels for unified inventory and sales management.
* Automation of order processing and fulfillment, including online orders and in-store pickups.
* Real-time stock synchronization across multiple locations.

### 8. ****Scalability and Multi-Store Operations****

* Centralized management of multiple stores or outlets through automated systems.
* Scalability to accommodate business growth without significant manual intervention.
* Consistency in pricing, promotions, and policies across all branches.

### 9. ****Customer Self-Service****

* Introduction of self-checkout kiosks to reduce wait times.
* Interactive touchpoints for product information, reviews, and availability checks.
* Automated customer support through chatbots or virtual assistants.

### 4.6.1 In Scope functionality

These are the core functionalities that the project will cover:

1. **Inventory Management:**
   * Real-time stock tracking and updates.
   * Automated reordering based on predefined stock levels.
   * Integration with barcode/RFID systems for efficient inventory control.
2. **Sales and Billing:**
   * Centralized Point of Sale (POS) system for quick billing and accurate sales recording.
   * Integration with multiple payment methods (cash, cards, digital wallets).
3. **Customer Management:**
   * Implementation of loyalty programs and personalized promotions.
   * Collection and analysis of customer feedback.
4. **Employee Management:**
   * Role-based access control to ensure secure and efficient workflows.
   * Shift scheduling and performance tracking.
5. **Reporting and Analytics:**
   * Automated generation of reports on sales, inventory, and customer behavior.
   * Real-time dashboards for performance monitoring.
6. **Regulatory Compliance:**
   * Tax calculations and integration with relevant tax policies.
   * Data encryption and adherence to privacy laws like GDPR.
7. **Multi-Store Management:**
   * Centralized operations management for multiple outlets.
   * Synchronization of inventory and sales data across locations.
8. **Scalability and Flexibility:**
   * System designed to accommodate future growth and enhancements.

### 4.6.2 Out scope functionality

These are areas that the project will not address or include in its scope:

1. **Physical Infrastructure:**
   * Setup or procurement of hardware such as POS machines, scanners, or kiosks.
2. **Supply Chain Management:**
   * Vendor management, logistics, or warehouse operations beyond inventory tracking.
3. **E-commerce Integration:**
   * Direct management of online sales platforms unless explicitly included.
4. **Product Development:**
   * Manufacturing or sourcing of products will not be automated or managed.
5. **Third-Party Integrations:**
   * Custom integrations with unrelated external software, unless specified.
6. **Custom Hardware Development:**
   * Development of proprietary devices or hardware components for store operations.
7. **Advanced AI Features:**
   * Use of AI for predictive analytics or customer sentiment analysis (beyond basic analytics).
8. **Comprehensive IT Support:**
   * Post-deployment troubleshooting, maintenance, or IT support unless included in the service agreement.

### 5. Assumptions Technical Assumptions

1. Adequate infrastructure, such as a stable internet connection and compatible hardware (POS systems, barcode scanners), is available.
2. The system will operate on a reliable database capable of handling real-time data transactions.
3. Integration with third-party payment gateways and tax systems is feasible and supported.
4. End-users (e.g., employees) will have basic technical skills to operate the system with minimal training.

### Business Assumptions

1. All retail outlets involved have similar operational workflows that the system can standardize.
2. A sufficient budget is allocated for system development, testing, and implementation.
3. The project has stakeholder buy-in, including from store managers and staff.
4. The inventory categorization system (e.g., SKUs) is well-established and consistent across outlets.

### Customer-Related Assumptions

1. Customers are open to using automated processes, such as digital payments or self-checkout kiosks (if applicable).
2. Customer data collected during transactions will be willingly shared and used responsibly, within the scope of privacy laws.

### Functional Assumptions

1. The system is expected to scale with the business (e.g., accommodating additional outlets or product lines in the future).
2. The existing workflow processes (sales, inventory, etc.) are clearly defined and will serve as a baseline for automation.
3. Required integrations, such as with accounting or loyalty program systems, are supported and accessible.

### Compliance and Security Assumptions

1. The system will comply with local tax regulations, including automated calculations and reporting.
2. Data protection measures (encryption, access control) will meet legal requirements and industry standards.
3. Audit trails for all transactions will be maintained for transparency and compliance.

### Project Implementation Assumptions

1. End-users will cooperate during testing and provide timely feedback for system improvements.
2. Post-implementation support and maintenance will be available to address any unforeseen issues.
3. Adequate time will be allocated for system deployment, training, and transition from manual processes.

### 6. Constraints Technical Constraints

1. **Hardware Limitations**: Availability and compatibility of existing POS systems, barcode scanners, and other devices.
2. **Integration Challenges**: Difficulty in integrating with legacy systems or third-party software (e.g., payment gateways, tax systems).
3. **Scalability**: Limitations in accommodating future growth, such as additional stores or product lines.
4. **Real-Time Data Handling**: Constraints related to processing and syncing large amounts of data across multiple outlets.

### Budgetary Constraints

1. **Financial Resources**: Limited budget allocated for development, implementation, and ongoing maintenance.
2. **Cost of Upgrades**: Expenses for upgrading existing hardware or procuring additional infrastructure.

### Time Constraints

1. **Project Deadlines**: Strict timelines for system development, testing, and deployment.
2. **Training Time**: Limited time available for training employees on the new system.

### Human Resource Constraints

1. **Employee Adoption**: Resistance to change from staff accustomed to manual processes.
2. **Training Capacity**: Limited availability of trainers or resources for employee onboarding.

### Functional Constraints

1. **Customization**: Restrictions on customizing the system beyond predefined templates or features.
2. **Feature Scope**: Inability to include advanced features (e.g., predictive analytics, AI-powered insights) due to time or resource limitations.

### Regulatory Constraints

1. **Compliance Requirements**: Adherence to local tax laws, data protection regulations, and industry standards.
2. **Data Privacy**: Limitations on collecting, storing, or processing customer data due to legal restrictions.

### Operational Constraints

1. **Store Downtime**: Risk of temporary operational disruptions during system deployment.
2. **Data Migration**: Challenges in transferring existing data (inventory, customer records) to the new system.

### Geographical Constraints

1. **Regional Variability**: Differences in tax regulations, customer preferences, or operational practices across locations.
2. **Connectivity**: Reliance on stable internet connectivity for real-time updates and system performance.

### External Constraints

1. **Vendor Dependency**: Dependence on third-party vendors for software support, hardware procurement, or system maintenance.
2. **Market Dynamics**: Evolving customer expectations and competitive pressures that may demand frequent system updates.

### 7. Risks ****Technological Risks****

* **Risk**: Difficulty in integrating the system with legacy or third-party platforms.
  + **Likelihood**: Medium
  + **Impact**: High—delays in deployment and additional development costs.
  + **Strategy**: Mitigate—conduct compatibility tests early and involve third-party providers during design.
* **Risk**: Performance issues in handling real-time data for large inventories.
  + **Likelihood**: Medium
  + **Impact**: High—affects user experience and decision-making.
  + **Strategy**: Mitigate—use scalable cloud-based infrastructure and optimize system performance.
* **Risk**: Dependence on stable internet connectivity.
  + **Likelihood**: Medium
  + **Impact**: Medium—disruptions could affect real-time operations.
  + **Strategy**: Accept—implement offline functionality for critical features like billing.

### ****Skills Risks****

* **Risk**: Lack of trained staff to operate the new system.
  + **Likelihood**: High
  + **Impact**: Medium—leads to adoption delays and operational inefficiencies.
  + **Strategy**: Mitigate—provide comprehensive training sessions and ongoing support.
* **Risk**: Insufficient technical expertise in the development team.
  + **Likelihood**: Medium
  + **Impact**: High—may result in poor system performance.
  + **Strategy**: Transfer—outsource specific tasks to specialized vendors or consultants.

### ****Political Risks****

* **Risk**: Resistance to change from internal stakeholders.
  + **Likelihood**: Medium
  + **Impact**: Medium—hinders project progress and acceptance.
  + **Strategy**: Mitigate—engage stakeholders early, highlight benefits, and address concerns through workshops.
* **Risk**: Changes in business leadership or policies affecting priorities.
  + **Likelihood**: Low
  + **Impact**: High—risk of project being deprioritized or canceled.
  + **Strategy**: Accept—build a robust business case to secure ongoing leadership buy-in.

### ****Business Risks****

* **Risk**: Financial loss if the project is canceled mid-development.
  + **Likelihood**: Low
  + **Impact**: High—significant sunk costs with no return on investment.
  + **Strategy**: Mitigate—ensure project feasibility through a thorough planning phase and regular review checkpoints.
* **Risk**: Loss of customer trust if the system fails to deliver expected benefits.
  + **Likelihood**: Medium
  + **Impact**: High—could lead to a decline in sales and brand reputation.
  + **Strategy**: Avoid—rigorously test the system before deployment.

### ****Requirements Risks****

* **Risk**: Incorrectly capturing business needs during the requirement-gathering phase.
  + **Likelihood**: Medium
  + **Impact**: High—results in a system that doesn’t meet user expectations.
  + **Strategy**: Mitigate—conduct detailed requirements analysis with end-user input.
* **Risk**: Overlooking essential features, like localized tax compliance.
  + **Likelihood**: Medium
  + **Impact**: High—leads to non-compliance and potential penalties.
  + **Strategy**: Mitigate—engage legal and operational experts during the requirements phase.

### ****Other Risks****

* **Risk**: Vendor delays in delivering required software or hardware.
  + **Likelihood**: Medium
  + **Impact**: Medium—causes project timeline extensions.
  + **Strategy**: Transfer—include strict delivery timelines in vendor contracts.
* **Risk**: Data security breaches during or after implementation.
  + **Likelihood**: Low
  + **Impact**: High—compromises sensitive customer and business data.
  + **Strategy**: Avoid—implement robust encryption and access control measures.

**8. Business process overview**

**8.1 Legacy system**

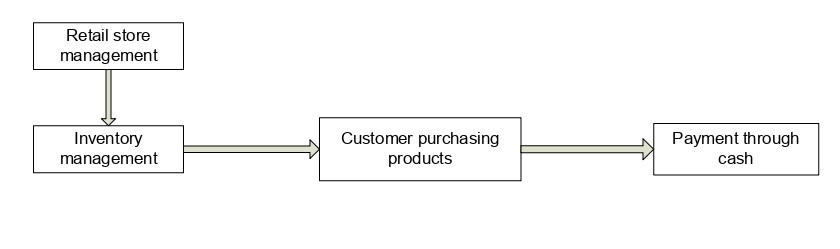
The **"as-is" state** of retail store management, when relying on traditional methods of maintaining records, often involves manual processes that can be prone to inefficiencies and human errors.

### ****Current Methods****

1. **Inventory Records**: Maintained using handwritten logs or simple spreadsheets, making tracking stock levels, reorders, or discrepancies labor-intensive and error-prone.
2. **Sales Data**: Recorded manually or with outdated cash registers, leading to inconsistencies in sales reporting and time-consuming reconciliation.
3. **Customer Records**: Limited to physical forms or basic notes, making it harder to track customer preferences or implement loyalty programs effectively.
4. **Staff Scheduling**: Managed on paper or rudimentary tools, causing confusion, conflicts, or missed shifts.
5. **Reporting**: Relies heavily on manual calculations and reporting, increasing the likelihood of misinterpretations or delays.

### ****Challenges and Risks****

* **Human Errors**: Data entry mistakes, missed updates, or misplaced records can disrupt operations.
* **Time-Consuming Processes**: Manual record-keeping slows down decision-making and response time.
* **Limited Scalability**: As the business grows, these methods cannot handle increasing complexity.
* **Lack of Insights**: Without automation, identifying trends or analyzing performance is challenging.
* **Customer Experience**: Inconsistent service due to delays or inaccurate data can impact satisfaction.



### 8.2Proposed Recommendations ("To Be")

The proposed automated system for retail store management addresses the inefficiencies of the legacy system by streamlining operations, improving accuracy, and enhancing customer satisfaction. Here’s an overview of the recommended process and how it resolves challenges:

### 1. ****Inventory Management****

**Recommended Process:**

* Implement a real-time inventory tracking system to monitor stock levels automatically.
* Use predefined reorder thresholds for automatic purchase order generation when stock is low.
* Integrate barcode or RFID systems for efficient stock management and tracking.

**Challenges Addressed:**

* Eliminates manual stock counts, reducing errors and inefficiencies.
* Avoids overstocking and stockouts by automating reorder processes.
* Simplifies inventory categorization with better visibility into stock movement.

### 2. ****Sales and Billing****

**Recommended Process:**

* Introduce a centralized Point of Sale (POS) system for faster and accurate billing.
* Enable support for multiple payment modes (cash, card, digital wallets).
* Store sales data in a centralized database for real-time access and reporting.

**Challenges Addressed:**

* Reduces manual effort and errors in billing and transaction recording.
* Speeds up checkout processes, improving customer experience.
* Provides centralized sales records for better decision-making.

### 3. ****Customer Relationship Management (CRM)****

**Recommended Process:**

* Implement loyalty programs to reward repeat customers with points and discounts.
* Use customer data to offer personalized promotions and recommendations.
* Automate customer feedback collection and analysis for service improvement.

**Challenges Addressed:**

* Fosters customer loyalty and retention through data-driven incentives.
* Allows tailored customer experiences, enhancing satisfaction and engagement.
* Simplifies feedback management, enabling quicker responses to concerns.

### 4. ****Reporting and Analytics****

**Recommended Process:**

* Generate automated reports on sales, inventory, and customer behavior.
* Use dashboards to provide real-time insights into key performance metrics.
* Leverage advanced analytics to forecast trends and optimize operations.

**Challenges Addressed:**

* Reduces manual effort in creating reports, saving time and ensuring accuracy.
* Helps identify sales trends, enabling data-driven strategic decisions.
* Provides visibility into customer preferences and product performance.

### 5. ****Compliance and Security****

**Recommended Process:**

* Automate tax calculations and reporting to meet legal requirements.
* Encrypt customer and business data to enhance security.
* Implement role-based access control to restrict sensitive information access.

**Challenges Addressed:**

* Eliminates manual tax calculations, reducing errors and ensuring compliance.
* Protects sensitive data from breaches, maintaining trust and privacy.
* Enhances accountability and transparency through access control.

### 6. ****Employee and Task Management****

**Recommended Process:**

* Track employee performance metrics such as sales completed and shift adherence.
* Automate shift scheduling to ensure fair and efficient allocation of tasks.
* Provide role-based system access to employees based on their responsibilities.

**Challenges Addressed:**

* Reduces administrative burden and ensures better resource allocation.
* Improves employee accountability and performance tracking.
* Enhances security by limiting system access to authorized personnel.

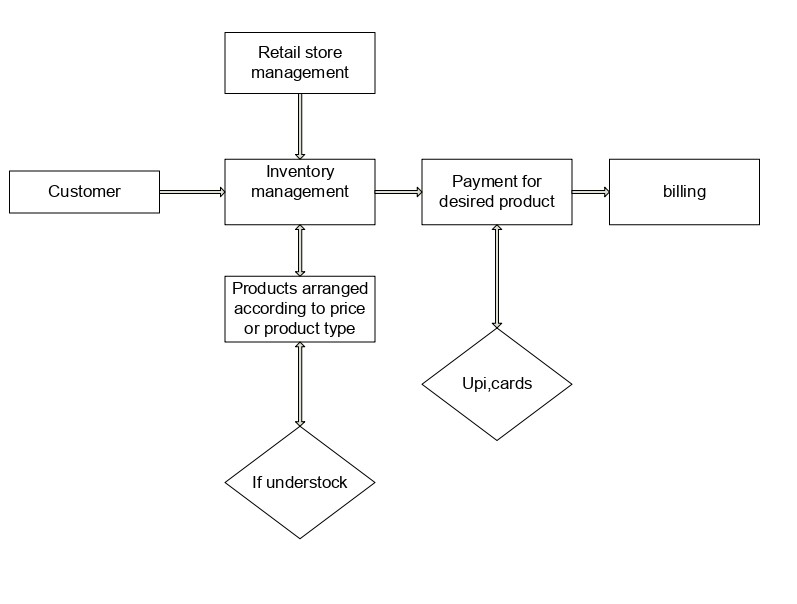
### 7. ****Scalability and Multi-Store Operations****

**Recommended Process:**

* Enable centralized management for all retail outlets using a single platform.
* Synchronize inventory, sales, and customer data across multiple locations.
* Create standardized policies for pricing, promotions, and operations.

**Challenges Addressed:**

* Simplifies operations for businesses with multiple branches.
* Ensures consistency in customer experiences across locations.
* Reduces operational complexity as the business grows.



**9. Business Requirements**

### 1. ****Business Requirements Categorized by Priority and Functionality****

* **High-Priority Requirements:**
  + Automation of billing and invoicing processes.
  + Real-time inventory tracking and restocking alerts.
  + Integration with existing CRM systems for customer management.
* **Medium-Priority Requirements:**
  + Automated scheduling for staff based on demand prediction.
  + Personalized marketing and promotional campaigns.
* **Low-Priority Requirements:**
  + AI-driven customer assistance (e.g., chatbots or in-store kiosks).
* **Areas of Functionality:**
  + **Inventory Management:** Automatic tracking, order generation, and supplier integration.
  + **Customer Management:** Loyalty programs, purchase history, and personalized offers.
  + **Employee Management:** Scheduling and payroll automation.
  + **Reporting and Analytics:** Real-time dashboards and predictive analytics.

### 2. ****Use Case Documentation and References****

* Provide detailed use case documents for:
  + Inventory tracking: Process flow, triggers, and expected outcomes.
  + Billing systems: Integration points, error handling, and security.
  + Customer engagement: Use cases for targeted promotions and loyalty tracking.
* **Key Reference Materials:**
  + Manuals for existing systems or APIs.
  + Research papers or benchmarks on store automation.
  + User journey maps to support functional alignment.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  | | --- | --- | | **Requirement ID** |  | | |  |  | | --- | --- | | **Business Requirement** |  | | |  |  | | --- | --- | | **Functional Requirement** |  | | |  |  | | --- | --- | | **Non-Functional Requirement** |  | | |  |  | | --- | --- | | **Priority** |  | | **Status** |
| BR-01 | Automated billing | Integration with POS system | Low error rate | high | pending |
| BR-02 | Real-time inventory tracking | Automatic stock level monitoring | Maximum uptime | high | In progress |
| BR-03 | Customer loyalty management | CRM system integration | High scalability | medium | pending |

**10. Appendices**

**10.1 list of acronyms**  
Here are some common acronyms that could be relevant to the retail store management automation project:

1. **POS** - Point of Sale
2. **SKU** - Stock Keeping Unit
3. **CRM** - Customer Relationship Management
4. **KPI** - Key Performance Indicator
5. **RFID** - Radio Frequency Identification
6. **BRD** - Business Requirements Document
7. **NFR** - Non-Functional Requirements
8. **FR** - Functional Requirements
9. **UI/UX** - User Interface/User Experience
10. **GDPR** - General Data Protection Regulation
11. **API** - Application Programming Interface
12. **IT** - Information Technology
13. **ROI** - Return on Investment
14. **ERP** - Enterprise Resource Planning
15. **HR** - Human Resources

### ****10.2Glossary of Terms****

1. **Automation**: The use of technology to perform tasks with minimal human intervention, aiming to increase efficiency and reduce errors.
2. **Barcode**: A machine-readable code representing data about a product, such as price and inventory information.
3. **Cloud-Based System**: A software solution hosted on remote servers, providing scalability, accessibility, and real-time updates.
4. **Compliance**: Adhering to legal and regulatory requirements, such as tax laws and data privacy regulations.
5. **Customer Relationship Management (CRM)**: A strategy and system used to manage interactions with customers, improve loyalty, and drive sales.
6. **Data Encryption**: A security measure that encodes data to protect it from unauthorized access during storage or transmission.
7. **Dashboards**: Visual displays of key performance indicators (KPIs) and other data metrics, enabling real-time monitoring and decision-making.
8. **Inventory**: The stock of goods or products available for sale in a retail store.
9. **Key Performance Indicator (KPI)**: A measurable value that indicates how effectively a business is achieving its objectives (e.g., sales growth, customer retention).
10. **Loyalty Program**: A rewards program designed to incentivize repeat purchases and build customer loyalty.
11. **Point of Sale (POS)**: The system used to process sales transactions and record payment details at the checkout.
12. **Radio Frequency Identification (RFID)**: A technology that uses electromagnetic fields to identify and track items via embedded tags.
13. **Real-Time Data**: Information that is updated instantly, providing immediate access to the latest data for decision-making.
14. **Scalability**: The ability of a system to handle increasing amounts of work or expand to accommodate growth.
15. **Stock Keeping Unit (SKU)**: A unique identifier assigned to a product for inventory tracking purposes.
16. **Traceability Matrix**: A tool used to track and ensure that all business requirements are addressed and met during the project lifecycle.
17. **User Interface (UI)**: The visual and interactive elements of a system that users interact with, such as screens, buttons, and menus.
18. **Uptime**: The percentage of time a system or software remains operational without disruptions.
19. **Workflow**: A series of tasks or steps involved in completing a business process.
20. **Zero Downtime**: A state where a system experiences no interruptions in availability during updates or operations.

10.3 Related documents

### ****1. Business Requirements Document (BRD)****

* Outlines the business goals, objectives, and high-level requirements of the project.
* Includes traceability matrix, glossary of terms, scope, constraints, and assumptions.

### ****2. Functional Requirements Specification (FRS)****

* Details the functional features and operations the system needs to support, such as inventory management, billing, and reporting.

### ****3. Non-Functional Requirements (NFR) Document****

* Specifies performance, security, scalability, and availability requirements that the system must adhere to.

### ****4. Use Case Documentation****

* Provides descriptions of the system's interaction with users and other systems to fulfill specific requirements.
* Examples: Use cases for billing, inventory tracking, and generating reports.

### ****5. System Design Document (SDD)****

* Describes the architecture, modules, data flow diagrams, and database schema of the proposed system.

### ****6. Test Plan and Test Case Documentation****

* Defines the testing approach, test cases, and scenarios to validate system functionality and performance.

### ****7. Data Migration Plan****

* Outlines the strategy for transitioning existing data (inventory, sales, and customer records) from the legacy system to the automated system.

### ****8. Change Management Plan****

* Details the process for training employees, managing stakeholder expectations, and ensuring smooth adoption of the new system.

### ****9. Risk Management Plan****

* Lists potential risks, likelihood of occurrence, mitigation strategies, and contingency plans.

### ****10. Compliance Documentation****

* Ensures the system meets regulatory requirements such as tax laws, data privacy regulations (e.g., GDPR), and security standards.

### ****11. User Training Manuals****

* Guides end-users on how to use the new system, including features like billing, inventory tracking, and generating reports.

### ****12. Project Plan****

* Includes timelines, milestones, resource allocation, and deliverables to manage the project effectively.

### ****13. Vendor Agreements and SLAs (Service Level Agreements)****

* Covers agreements with third-party vendors for software, hardware, or services, including timelines and support levels.

### ****14. Maintenance and Support Plan****

* Provides a roadmap for ongoing system updates, issue resolution, and support after implementation.

### ****15. Stakeholder Communication Plan****

* Ensures all stakeholders are informed about project progress, key milestones, and decisions.