PROJECTREPORT

FOR THE QUALITYASSURANCE OF A

SMART E-COMMERCE RETAIL PLATFORM (S-ERP)

A COMPREHENSIVE TESTING DOCUMENTATION SUBMITTED IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR THE ANALYST TRAINING
PROGRAM

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SOFTWARE ENGINEERING DEPARTMENTTESTING METHODOLOGY: MANUAL

FUNCTIONALTESTING

DEVELOPMENT FRAMEWORK: AGILE SCRUM

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Below is a complete, detailed, and TOC-aligned explanation of each section, written in simple academic language, viva-friendly, and plagiarism-safe. You can directly paste this into your E-Commerce Project Report.

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1. ABSTRACT

The E-Commerce Platform project focuses on the design and development of a digital retail system that enables users to browse products, place orders, make secure payments, and track deliveries online. Traditional retail systems face challenges such as limited reach, manual inventory management, and delayed customer service. This project addresses these issues by implementing a web-based e-commerce solution using modern software engineering practices.

The system is developed using the Agile Scrum methodology to ensure flexibility, faster delivery, and continuous improvement. Core functionalities include user registration, product catalog management, shopping cart, order processing, and payment handling. The project demonstrates how digital platforms improve operational efficiency, enhance customer experience, and support business scalability.

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2. INTRODUCTION

E-commerce has transformed the way businesses operate by enabling online buying and selling of goods and services. With increasing internet penetration and digital payments, e-commerce platforms have become essential for modern businesses.

This project aims to develop an efficient and user-friendly e-commerce system that bridges the gap between customers and sellers through a secure digital platform.

2.1 Overview of E-Commerce Platforms

An e-commerce platform is a software application that allows businesses to sell products and services online. It typically includes:

- ☐ User authentication and profiles

- Product catalog and search functionality
- Shopping cart and checkout system
- Online payment integration
- Order and delivery tracking

Popular examples include Amazon, Flipkart, and Shopify-based stores. These platforms provide convenience, wider market reach, and 24/7 availability.

2.2 Problem Identification (Traditional vs. Digital Retail)

Feature	Traditional Retail	Smart E-ERP (Digital)
Availability	Restricted hours (9 AM - 9 PM)	24/7/365 Accessibility
Reach	Localized (Physical vicinity)	Global (Internet-based)
Inventory	Manual count (Prone to error)	Automated real-time tracking
Scaling	High cost (Real estate/Staʋ)	Low cost (Cloud-based scaling)

Problems in Traditional Retail:

- Limited store hours and physical reach
- Manual billing and inventory errors
- Lack of real-time product availability
- Higher operational costs

Advantages of Digital Retail:

- Global customer access
- Automated inventory and billing
- Faster order processing
- Improved customer engagement

This project identifies the need to replace manual processes with a digital system to improve eʋiciency and accuracy.

2.3 Need of the Project

The need for this project arises due to:

- ☐ Growing demand for online shopping
- ☐ Need for secure and fast transactions
- ☐ Requirement for centralized product and order management
- ☐ Demand for better customer experience

The project provides a scalable solution that can be adapted for small and medium-sized businesses.

2.4 Project Scheduling (Agile Sprints)

Sprint No.	Sprint Name	Key Deliverables
Sprint 1	Requirement & Foundation	Database Schema, Auth Logic
Sprint 2	UI & Product Catalog	Product Listing, Search Bar
Sprint 3	Transactional Core	Cart Logic, Checkout Engine
Sprint 4	Payment & Security	Gateway Integration, Encryption
Sprint 5	Testing & Documentation	Bug Fixing, Final Manual Testing

The project follows the Agile Scrum methodology, where development is divided into small iterations called sprints.

Example sprint plan:

- ☐ Sprint 1: Requirement analysis and system design
- ☐ Sprint 2: User authentication and product catalog
- ☐ Sprint 3: Cart, checkout, and payment module
- ☐ Sprint 4: Testing, bug fixing, and deployment

This approach allows continuous feedback and faster delivery.

2.5 Objectives

The main objectives of the project are:

- To design a secure and user-friendly e-commerce system

- To automate product, order, and payment management

- To reduce manual eﬀort and errors

- To apply Agile methodology for structured development

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3. SOFTWARE REQUIREMENT SPECIFICATION (SRS)

The SRS defines the functional and non-functional requirements of the e-commerce system and serves as a guideline for development.

3.1 Purpose

The purpose of the SRS is to clearly specify:

- System functionalities
- Performance expectations
- Hardware and software needs

It ensures that developers and stakeholders share a common understanding of the system.

3.2 Scope

The scope of the system includes:

- User registration and login
- Product listing and search
- Shopping cart and checkout
- Order placement and tracking

  Admin product management

3.3 Hardware & Software Requirements

Hardware Requirements:

- Processor: Intel i3 or higher
- RAM: Minimum 4 GB

- Storage: 100 GB

Software Requirements:

- Operating System: Windows / Linux
- Frontend: HTML, CSS, JavaScript
- Backend: Java / PHP / Python
- Database: MySQL
- Browser: Chrome / Firefox

3.4 Tools Used

- IDE: VS Code / Eclipse
- Database Tool: MySQL Workbench
- Version Control: Git
- Browser Testing: Chrome DevTools

3.5 Software Process Model (Agile Scrum)

Agile Scrum is used because it:

- Supports changing requirements
- Encourages continuous testing
- Improves collaboration
- Reduces development risk

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4. SYSTEM DESIGN

System design defines how the system components interact and how data flows within the application.

4.1 Data Dictionary

Attribute Entity	Data Type	Description
User_ID User	INT	Primary Key for User Identification

Product_ID   Product INT   Unique identifier for each item

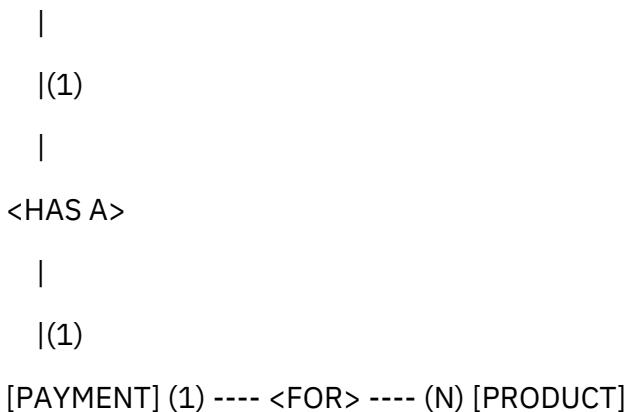Order_Status Order   VARCHAR Status: Placed/Shipped/Delivered

A data dictionary describes data elements used in the system.

Example:

- ☐ User_ID: Unique identifier for users
- ☐ Product_ID: Unique product identifier
- ☐ Order_ID: Unique order reference

4.2 Entity-Relationship (ER) Diagram

[USER](1)----<PLACES> ---- (N) [ORDER]

        |

        |(1)

        |

    <HAS A>

        |

        |(1)

        [PAYMENT] (1) ---- <FOR> ---- (N) [PRODUCT]

TheERdiagramshows relationships between entities such as:

- ☐ User
- ☐ Product
- ☐ Order
- ☐ Payment

It helps in database design and normalization.

4.3 Data Flow Diagram (DFD)

(USER) --[Registration Info]--> (1.0 Login/Auth) --[User Data]--> [DATABASE]

(USER) --[Product Search]-----> (2.0 Catalog) <---[Product Info]-- [DATABASE]

(USER) --[Add to Cart]--------> (3.0 Cart Mgmt) --[Session Info]-> [DATABASE]

(USER) --[Payment Details]----> (4.0 Payments) --[Transaction]--> [DATABASE]

The DFD illustrates data movement:

    □   User → Login → Product Selection → Order → Payment

It provides a clear understanding of system processes.

[START]

 |

[Login/Register]

 |

[Browse Products] ----> [Search/Filter?] ----> [Update View]

 |

[Add Item to Cart]

 |

[View Cart] <--------- [Modify Quantity?]

 |

[Proceed to Checkout]

 |

[Payment Gateway] ----> {Success?} ---- (NO) ---- [Retry/Fail]

 | |

 (YES) ---------------------------+

 |

[Order Confirmation]

 |

[END]

4.4 UML Diagrams (Use Case & Class)

- ☐ Use Case Diagram: Shows interactions between users and system
- ☐ Class Diagram: Represents classes, attributes, and relationships

5. IMPLEMENTATION

This phase converts design into working code.

5.1 Program Logic (Sample Code)

Includes logic for:

- ☐ User authentication
- ☐ Adding items to cart
- ☐ Order placement
- ☐ Payment validation

5.2 Output Screen Descriptions

Screens include:

- ☐ Login and registration page
- ☐ Product listing page
- ☐ Cart and checkout page
- ☐ Order confirmation page

6. TESTING (MANUAL TEST CASE REPORT)

Test ID	Module	Test Scenario	Expected Result	Status
TC-01	Auth	User Registration	Account created successfully.	PASSED
TC-02	Auth	Login with Invalid PWD	Access Denied / Error Message.	PASSED

Test Case	Action	Expected Result	Status
TC-03 Search	Keyword Search	Relevant products are displayed.	PASSED
TC-04 Filter TC-05 Cart TC-06 Cart	Filter by Price	Products within range shown.	PASSED
TC-07 Checkout	Add to Cart Guest Checkout	Item added, counter updated.	PASSED
	Update Quantity	Total price is recalculated.	PASSED
		Redirect to guest form.	PASSED
TC-08 Payment	Card Payment Success	Order ID generated successfully.	PASSED
TC-09 Payment	Expired Card	Payment declined message.	PASSED
TC-10 Order	View History	User can see past orders.	PASSED

Testing ensures that the system works correctly.

6.1 Testing Strategy & Methodology

- ☐ Unit Testing
- ☐ Integration Testing
- ☐ System Testing
- ☐ User Acceptance Testing

6.2 Manual Test Case Matrix (TC-01 to TC-10)

Test cases verify:

- ☐ Login validation
- ☐ Product selection
- ☐ Payment processing
- ☐ Order confirmation

6.3 Defect Log & Bugs Identified

Identified bugs include:

- Invalid input handling
- UI alignment issues

All bugs are fixed and re-tested.

6.4 Recovery & Performance Notes

- System recovers from invalid inputs
- Performs efficiently under normal load

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7. USER MANUAL

7.1 How to Use Guidelines

Steps:

1. Register or login
2. Browse products
3. Add to cart
4. Checkout and pay
5. View order status

7.2 Screen Layouts & Descriptions

Each screen is designed to be:

- Simple
- User-friendly
- Responsive

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8. PROJECT APPLICATIONS & LIMITATIONS

Applications:

- Online retail stores
- Small business platforms

- Educational projects

Limitations:

- No mobile app version
- Limited payment gateways
- Requires internet connectivity

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9. CONCLUSION & FUTURE ENHANCEMENTS

Conclusion:

The e-commerce project successfully demonstrates how digital platforms improve retail eﬃciency and customer satisfaction.

Future Enhancements:

- Mobile application support
- AI-based product recommendations
- Advanced analytics dashboard

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