

# Risk Assessment & Mitigation Plan for TechXpress E-commerce Platform

## 1. Introduction

The development of the TechXpress E-commerce platform comes with a lot of risks that could impact its functionality, This document outlines potential risks and Mitigations.

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## 2. Possible Risks & Mitigation Methods

### Risk 1: Poor system architecture leading to performance issues.

- *Mitigation:* Follow NTier Architecture, Repository Pattern, and Unit of Work to ensure a scalable and maintainable codebase.  
Conduct regular code reviews and optimizations.

### Risk 2: Security vulnerabilities in authentication and payment integration.

- *Mitigation:* Use ASP.NET Identity for secure authentication and role-based access control. Implement security best practices such as password hashing, multi-factor authentication, and OAuth. Secure payment transactions with Stripe's recommended security measures.

### Risk 3: Database integrity issues and data loss.

- *Mitigation:* Use Entity Framework Core with Unit of Work to ensure atomic transactions. Implement regular database backups and enforce data validation rules.

### Risk 4: Compatibility and responsiveness issues across devices.

- *Mitigation:* Utilize Bootstrap for a responsive UI and conduct cross-browser/device testing throughout development.

### Risk 5: Poor session management affecting shopping cart functionality.

- *Mitigation:* Use Session State for cart storage and implement session expiration strategies to prevent stale data.

### Risk 6: Ineffective role-based access control (RBAC) allowing unauthorized actions.

- *Mitigation:* Properly configure ASP.NET Identity roles (Customer, Admin) and implement access control policies in controllers.

### Risk 7: Deployment failures causing downtime.

- *Mitigation:* Use Microsoft Azure/Hostinger for hosting with continuous integration and deployment (CI/CD) pipelines. Conduct deployment tests on a staging server before going live.

**Risk 8: Payment failures due to Stripe API errors.**

- *Mitigation:* Implement detailed error logging and fallback mechanisms for failed transactions. Notify users in case of issues and provide retry options.

**Risk 9: Inventory mismanagement leading to overselling.**

- *Mitigation:* Implement a real-time inventory management system that updates stock levels upon successful order placement.

**Risk 10: Poor user adoption due to unoptimized UI/UX.**

- *Mitigation:* Conduct user testing, gather feedback, and implement improvements. Enhance UI using jQuery and interactive elements for better user engagement.

**Risk 11: Non-compliance with data protection regulations (e.g., GDPR, PCI DSS).**

- *Mitigation:* Ensure encryption of sensitive data, obtain user consent for data collection, and follow Stripe’s PCI compliance guidelines.

**Risk 12: Unauthorized access due to weak security measures.**

- *Mitigation:* Use HTTPS, secure API endpoints, implement rate limiting, and regularly update security patches.

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**3. Severity Chart**

Risk 1	Risk 2	Risk 3	Risk 4
Risk 5	Risk 6	Risk 7	Risk 8
Risk 9	Risk 10	Risk 11	Risk 12

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**3. Conclusion**

This risk assessment and mitigation plan aims to ensure the stability, security, and efficiency of the TechXpress e-commerce platform. By proactively addressing potential risks, the project team can minimize disruptions and deliver a high-quality, scalable application.