



มหาวิทยาลัยราชภัฏนครปฐม



Chapter 9

Software Development for E-Commerce

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Introduction

- E-Commerce software enables online businesses to operate efficiently.
- Key aspects include planning, development, security, and maintenance.
- This presentation covers best practices, technology choices, and future trends.



Planning & Requirement Analysis

- Define objectives: Online sales, branding, customer service.
- Market analysis: Competitor research & customer behavior.
- Identify target audience: User demographics & needs.



UI/UX Design & Development

- User Interface (UI): Simple, attractive, responsive design.
- User Experience (UX): Smooth navigation, easy checkout process.
- Tools: Figma, Adobe XD, Bootstrap frameworks.



Technology Selection

- Front-End: HTML, CSS, JavaScript (React, Vue, Angular).
- Back-End: Node.js, PHP (Laravel), Python (Django).
- Database: MySQL, PostgreSQL, MongoDB.
- Hosting: AWS, Google Cloud, Azure.



Key Features of E-Commerce Software

- Product Management: Add/edit/delete products, categories.
- Payment Gateway Integration: Stripe, PayPal, Razorpay.
- Order & Inventory Management: Real-time stock updates.
- Shipping & Tracking: Integration with logistics providers.



Security Considerations

- SSL Encryption: Protects user data.
- Two-Factor Authentication (2FA): Prevents unauthorized access.
- PCI DSS Compliance: Ensures secure payment transactions.
- Data Protection: Secure customer information storage.



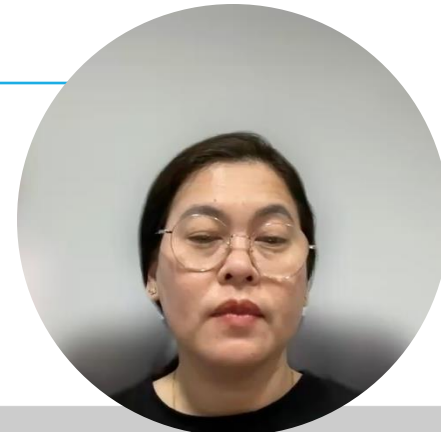
Software Testing & Debugging

Unit Testing: Tests individual functions.

Integration Testing: Checks module interactions.

User Acceptance Testing (UAT): Ensures business requirements are met.

Performance Testing: Analyzes speed and scalability.





Deployment & Launch

- CI/CD (Continuous Integration/Continuous Deployment).
- Cloud Hosting & Domain Setup.
- Launch Strategies: Beta testing, soft launch, marketing campaigns.

Maintenance & Performance Optimization



- Regular Updates: Security patches & feature enhancements.
- Analytics & Monitoring: Google Analytics, Heatmaps.
- User Feedback & Support: Improve based on customer reviews.



Open Source & CMS Platforms

Advantages of Open Source: Cost-effective, customizable, strong community support.

Popular CMS:

- WordPress (WooCommerce)
 - Magento
 - Joomla!
 - Drupal
 - Shopify (SaaS-based alternative)
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Custom Feature Development

- Requirement Gathering: Identify user needs.
- Prototyping: Create mockups for testing.
- Development: Choose suitable technologies.
- Testing & Debugging: Ensure functionality.



API Integration in E-Commerce

- Payment API: Stripe, PayPal.
- Shipping API: FedEx, DHL, UPS.
- CRM API: Salesforce, HubSpot.
- Marketing API: Facebook Ads, Google Analytics.



Case Studies of Successful E-Commerce Software

- Amazon: AI-powered recommendation system.
- Alibaba: Large-scale B2B platform with secure transactions.

Emerging Trends in E-Commerce Software



- AI & Machine Learning: Personalized recommendations.
- Voice Commerce: Smart assistants (Alexa, Google Assistant).
- Blockchain: Secure transactions & decentralized payments.
- Augmented Reality (AR): Virtual product try-on.

Challenges in E-Commerce Software Development



- Scalability Issues: Handling increased traffic.
- Cybersecurity Risks: Protecting sensitive customer data.
- Third-Party Integrations: Ensuring API compatibility.
- User Trust & Experience: Optimizing performance & reliability.



Future of E-Commerce Software

- Headless Commerce: API-driven front-end customization.
- 5G Integration: Faster mobile experiences.
- Metaverse & Virtual Shopping: Interactive e-commerce solutions.



Summary

- E-Commerce software development is crucial for online business success.
- Proper planning, security, and innovation are key factors.
- Future technologies will continue to shape the e-commerce industry.



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