E COMMERCE WEBSITES

KNOWLEDGE DEMONSTRATION REPORT

Submitted by

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BONAFIDE CERTIFICATE

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ABSTRACT

An e-commerce website is a digital platform that allows individuals and businesses to buy and sell products or services over the internet. It serves as a virtual storefront where customers can browse items, compare prices, read reviews, place orders, and make payments—all from the comfort of their home. E-commerce has revolutionized the way people shop by offering convenience, variety, and often better pricing compared to traditional brick-and-mortar stores. A typical e-commerce website includes key features such as a product catalog, search functionality, shopping cart, user accounts, secure payment gateways, and order tracking. These components work together to provide a seamless shopping experience. Customers can filter products based on categories, brands, or price ranges, add items to their cart, and proceed to checkout with just a few clicks. After purchase, users often receive email notifications and can track their orders until delivery. From a technical standpoint, an e-commerce website involves both front-end and back-end development. The front end focuses on the design, layout, and user interaction, ensuring the site is user-friendly and responsive on all devices. The back end handles server-side operations such as managing databases, processing payments, storing user data, and handling inventory. Security is a critical component of any e-commerce website. Encryption technologies like SSL (Secure Socket Layer) and secure payment systems are implemented to protect sensitive customer information, including personal details and credit card numbers. Authentication and authorization systems help ensure that only registered users can access their accounts and make purchases.

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CHAPTER 1

INTRODUCTION

An eCommerce website is an online platform that enables buying and selling of goods or services over the internet. With the rapid growth of digital technology, eCommerce has become a vital part of modern business, allowing companies to reach a global audience, reduce operational costs, and offer customers the convenience of shopping from anywhere at any time. This project focuses on creating a basic eCommerce website that simulates the core functionalities of an online store. The main objective of the project is to understand and implement the fundamental components of an eCommerce system, including user interface design, backend development, database integration, and basic security measures. Technologies such as HTML, CSS, JavaScript, and PHP or Node.js are used for development, while MySQL or a similar database handles data storage.

1.1 E COMMERCE WEBSITE:

E Commerce websites are online platforms that allow businesses and individuals to buy and sell products or services over the internet. These websites have revolutionized the way people shop by offering convenience, a wide variety of products, and 24/7 accessibility. Instead of visiting a physical store, customers can browse products, compare prices, read reviews, and make purchases online. There are several types of eCommerce websites, including Businessto-Consumer (B2C), Business-to-Business (B2B), Consumer-toConsumer (C2C), and more. Popular examples include Amazon, Flipkart, eBay, and Alibaba.

1.2 STRIPE API

The Stripe API is a powerful and developer-friendly tool that allows businesses to accept and manage online payments securely. Stripe is one of the most widely used payment processing platforms in the world, trusted by companies like Amazon, Shopify, and Google. Its API makes it easy to integrate payment functionality into websites and mobile applications. An eCommerce website typically includes essential features like product listings, search and filter options, a shopping cart, checkout process, payment integration, and user account management. On the backend, there are systems for order tracking, inventory management, and customer support.

CHAPTER 2

APPLICATION FRONTEND

The frontend of a web application is the part that users interact with directly. It is built using three core technologies: HTML, CSS, and JavaScript. HTML (HyperText Markup Language) is used to structure the content of web pages, such as headings, paragraphs, images, and buttons. such as form validation, dynamic content updates, and user interface behaviors. In an eCommerce website, the frontend includes the product pages, shopping cart, login forms, and checkout process. Together, HTML, CSS, and JavaScript form the foundation of modern web design, making websites visually appealing, interactive, and responsive across all devices.

2.1 USED LANGUAGE

HTML

HTML (HyperText Markup Language) is the fundamental language used to create and structure content on the web. It provides the basic framework for webpages by using a system of tags and elements. These tags define the various parts of a webpage, such as headings, paragraphs, links, images, tables, forms, and more. For example, the <h1> tag is used for main headings, while the <p> tag defines a paragraph.

CSS

CSS (Cascading Style Sheets) is a stylesheet language used to control the appearance and layout of HTML elements on a webpage. While HTML structures the content, CSS adds style—such as colors, fonts, spacing, borders, and positioning—to make the website visually appealing and user-friendly.

JAVASRIPT

JavaScript is a powerful programming language used to add interactivity and dynamic behavior to websites. JavaScript is an essential part of modern web development and works closely with HTML and CSS to build interactive, user-friendly websites.

NODE JS

Node.js is an open-source, cross-platform JavaScript runtime environment that allows developers to run JavaScript code outside of a web browser.

CHAPTER 3
APPLICATION BACKEND

The backend of an eCommerce website is the server-side part of the application that manages all the core functionality behind the scenes. It is responsible for handling data, user authentication, product management, order processing, payment integration, and communication with the database.

In a typical eCommerce backend, the main components include:

- Server: Handles client requests and routes them to the correct functions (e.g., using Node.js, PHP, or Python).
- Database: Stores all data such as user accounts, product listings, orders, and payment details (e.g., MySQL, MongoDB).
- APIs: Enable communication between the frontend and backend, and with third-party services like Stripe for payments.
- Authentication: Manages login, registration, and security using methods like JWT or session tokens.
- Admin Panel: Allows the business owner to manage products, view orders, and monitor sales.

3.1 APPLICATION ACTION

An eCommerce website performs several key application actions to support online shopping and ensure a smooth user experience. These actions happen both on the frontend (user-facing) and backend (server-side). Common application actions include:

- User Registration & Login – Allows customers to create accounts, log in, and manage their profiles.
- Product Browsing – Displays products by category, brand, or search filters.

- Product Details View – Shows detailed information, images, prices, and reviews of selected products.
- Shopping Cart Management – Lets users add, remove, and update items in their cart.
- Checkout Process – Handles shipping details, payment method selection, and order confirmation.
- Order Placement – Records the order in the database and sends confirmation to the user.
- Payment Processing – Integrates with payment gateways like Stripe or PayPal to securely handle payments.
- Order Tracking – Allows users to view the status and history of their orders.
- Admin Actions – Enables management of products, inventory, users, and orders.

3.2 CONNECTION TO API

In an eCommerce website, an API (Application Programming Interface) acts as a bridge between the frontend (what the user sees) and the backend (server and database). The connection to the API allows the website to send and receive data—such as product info, user details, and order status—without reloading the page. APIs can also connect with third-party services like payment gateways (e.g., Stripe or PayPal), shipping services, or inventory systems.

3.3 CONNECTION TO DATABASE

In an eCommerce website, the database (DB) is where all important information is stored—such as user accounts, product listings, orders, payments, and reviews. The connection to the database allows the backend of the website to read, write, update, or delete this data in real time. A **database connection** is a link established between an application and a database management system (DBMS), enabling the application to send queries, retrieve data, and perform operations such as insert, update, delete, and manage data stored in the database. This connection allows seamless communication between the software and the database server.

CHAPTER 4

DATABASE MANAGEMENT SYSTEM

Database Management System (DBMS) is software that is used to create, manage, and organize databases. It allows users and applications to store, retrieve, update, and delete data efficiently while maintaining data accuracy and security.

A DBMS acts as an interface between the database and the user or application. It handles tasks like data storage, indexing, transactions, access control, and backup. Popular DBMS examples include MySQL, PostgreSQL, Oracle, Microsoft SQL Server, and MongoDB.

There are different types of DBMS:

- Relational DBMS (RDBMS) – uses tables and relationships (e.g., MySQL, PostgreSQL).
- NoSQL DBMS – uses flexible structures like documents or key-value pairs (e.g., MongoDB).

4.1 LOGIN AUTHENTICATION

Login authentication is a security mechanism that allows registered users to access their accounts by entering valid credentials—typically a username or email and a password—on a login page. The system checks these credentials against stored records
(usually in a database) and grants access

Purpose:

- Protect user accounts
- Enable personalized experiences (like showing saved items or past purchases)
- Secure sensitive data (e.g., addresses, payment info)
- Prevent unauthorized access

Process Flow:

- User enters login credentials (email & password) on the login page.

- Backend server receives the credentials and checks them against the database.
- If valid:
- A session or token (like JWT) is created. o User is logged in and redirected to their dashboard or homepage.

4.2 LOGIN ACCESS

Login access in an e-commerce website is the feature that allows registered users (like customers, sellers, or admins) to securely sign in to their personal accounts to access services such as browsing order history, managing addresses, adding to cart, and making payments.

1. Login Page UI

- Fields: Email/Username and Password
- Optional: "Remember Me" checkbox or “Forgot Password” link

2. User Input

• The user enters their registered email and password.

3. Backend Authentication

4.3 USED LANGUAGE

MYSQL:

SQL (Structured Query Language**)** is a standardized programming language used for managing and manipulating relational databases. It is widely used by developers, database administrators, and data analysts to perform operations such as storing, retrieving, updating, and deleting data. SQL works with relational database management systems (RDBMS) like MySQL, PostgreSQL, Oracle, Microsoft SQL Server, and SQLite.

The core purpose of SQL is to enable users to interact with a database using simple, declarative statements.

CHAPTER 5

APPLICATION USES

Product Browsing

Allows users to view and search for products by category, price, brand, etc.

User Registration & Login

Enables account creation and secure access to personal dashboards. Shopping Cart Lets users. Online Payment Integration Supports secure transactions through payment gateways like PayPal, Stripe, or credit cards.

5.1 USER FRIENDLY

A user-friendly e-commerce website is easy to navigate, fast, and simple to use. It provides a smooth shopping experience by offering clear product .It includes features like customer reviews, order tracking, and easy returns to build trust and satisfaction.

- Easy navigation and search
- Mobile-friendly design
- Fast loading speed
- Clear product details and images
- Simple login and checkout

5.2 EASYWAY TO PAYMENT

An easy payment method in an e-commerce website allows customers to complete purchases quickly, safely, and with minimal steps.

Key Features:

- Multiple options: Credit/Debit Cards, UPI, PayPal, Wallets
- One-click payments for saved cards or accounts
- Secure payment gateways (like Razorpay, Stripe, PayPal)

Goal:

Make payment fast, simple, and secure to improve user experience and reduce cart abandonment.

CHAPTER 6
APPLICATION FEATURES

An eCommerce website application enables users to browse, select, and purchase products or services online. Key features include a user-friendly interface, secure user registration and login, product catalog with detailed descriptions and images, smart search and filtering, shopping cart, and secure checkout. It integrates payment gateways for transactions and offers multiple payment options. Users can track orders, view purchase history, and receive email or SMS notifications. Admin features include inventory management, order processing, and customer management. Advanced analytics provide insights into sales and customer behavior. SEO tools, mobile responsiveness, and social media integration help attract and retain customers. Security features like SSL encryption and data protection ensure safe user experiences. Additionally, options like customer reviews, wish lists, and personalized recommendations enhance engagement and drive sales. This application serves both buyers and sellers efficiently, making online shopping convenient, scalable, and secure

6.1 CLOSED CIRCLE USES

An eCommerce website for closed circle use is designed exclusively for a specific group such as employees, registered members, or business partners. Access is restricted through secure login, ensuring only authorized users can view and purchase products. This type of platform is commonly used for internal company purchases, staff welfare stores, or B2B transactions. It includes features like a private product catalog, customized pricing, order tracking, and role-based access.

6.2 LIMIT TO ACESS

Normalization significantly enhances data integrity in Database Management Systems by enforcing structured organization and eliminating anomalies. By decomposing tables into smaller, relationally linked entities, normalization ensures that each data element is stored once and only once, preventing contradictory or duplicate information. This systematic approach establishes entity integrity through primary keys (ensuring unique records) and referential integrity through foreign keys (maintaining valid relationships between tables).

CHAPTER 7

CONCLUSION

In conclusion, eCommerce websites have revolutionized the way businesses operate and customers shop by offering convenience, accessibility, and efficiency. They provide a platform for selling products or services online, reaching a wider audience while reducing operational costs. With features like secure payment systems, userfriendly interfaces, and personalized experiences, eCommerce enhances customer satisfaction and drives growth. As technology advances, these platforms continue to evolve, integrating AI, mobile compatibility, and data analytics to stay competitive. Ultimately, eCommerce websites are essential tools for modern business success. An ecommerce website is a digital platform that enables the buying and selling of goods or services over the internet. It serves as a virtual storefront where businesses and consumers interact, conduct transactions, and manage orders. Unlike traditional brick-and-mortar stores, ecommerce websites operate online 24/7, providing convenience, wider reach, and often lower operational costs. These platforms typically include product listings, shopping carts, secure payment gateways, and customer service integrations.

Ecommerce websites come in various forms, including Business-to-Consumer (B2C), Business-to-Business (B2B), Consumer-to-Consumer (C2C), and Direct-to-Consumer (DTC) models. Examples include global giants like Amazon (B2C), Alibaba (B2B), eBay (C2C), and brand-owned sites like Nike.com (DTC). Each model supports different types of transactions but shares a core foundation—leveraging internet technology to facilitate commerce.

The rise of ecommerce websites has transformed global retail, providing consumers with instant access to products and enabling businesses to expand beyond geographical boundaries. Key components of a successful ecommerce website include user-friendly design, mobile responsiveness, strong cybersecurity, and efficient logistics and payment systems.

CHAPTER 8

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