

Customized electronics selling website based on algorithms

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Abstract- Recently the E-commerce platform is playing an important role in daily life; its activities are a subset of E-business activities. The aim of this project is to build and develop a dynamic responsive website for E-commerce. This website will sell computer products offered by the respective sellers. For implementing a dynamic website we used JavaScript, html, CSS and react.js in front end it also have a payment gateway powered by Razorpay also. We added a special algorithm for customers to find their useful and suitable products very easily by implementing task specific algorithm and organizing algorithm so that in the top viewed products with high customer rating will be shown easily and our Recommendation system will assist customers to buy compatible accessories for Computers and also similar products in same range be based on pattern matching, such as RNN, Naive Bayes, LSTM, NLP. We might add a tracking order by GPS and AI Chatbot in this project.

1.INTRODUCTION

In today's world, online shopping has become an integral part of our daily lives, offering convenience and accessibility to consumers worldwide. With the growth of the electronics industry, there has been an increase in demand for customized electronic products. However, the availability of customized electronics products in the market is limited, and it can be challenging for consumers to find what they are looking for. To address this issue, we propose a project that aims to design and develop a customized electronics selling website based on algorithms. This website will be a platform that allows consumers to customize their electronic products based on their specific needs and preferences. By leveraging algorithms, the website will provide personalized recommendations and suggestions to consumers, making the shopping experience more efficient and user-friendly. The primary objective of this project is to provide a one-stop solution for consumers looking for customized electronics products. The website will

offer a wide range of products that can be customized, including laptops, smartphones, and other electronic gadgets. The algorithms used in the website will help consumers choose from various options such as screen size, RAM, storage, and other features.

2.LITERATURE SURVEY

[1] A Conceptual Framework for Mitigating the Risk in eCommerce Websites

This paper proposed a framework to mitigate the risk in social trade which is a part E-business. We have mitigated the risk factors in social trade, and problems caused by it. This paper explains the guidelines which are overlooked while finding ways and techniques to mitigate risks in eCommerce Websites. Develop your conceptual framework: Based on your literature review and your understanding of the problem, develop a conceptual framework that outlines the key components of mitigating risk in eCommerce websites. This framework should include the risk factors that need to be addressed, the strategies that can be used to manage these risks, and the desired outcomes.

[2] Assessing E-commerce Websites

This study highlighted many issues of usability and accessibility of e-commerce websites in Pakistan. Following are the recommendations to improve the usability and overall satisfaction level of users in light of results obtained from the study. The most important feature of e-commerce website is to present the vicinity of business. That is, to inform user where services are provided and, which country and currency is currently selected. Ambiguity in availability of products or services, option of payment methods frustrates the user.

[3] Relationship Development Process in eCommerce Websites.

In this study, several themes were identified in the online relationship development process. Although further work is needed, the current study offers useful

insights in establishing the pathway to creating and maintaining a loyal customer. These insights should allow eCommerce managers to critically examine their relationship building blocks. Online relationships are based on individuals visiting a website and the critical function of the website is to generate in the product/service offering and the value proposition of the website. Websites with few visitors and high bounce rates are less likely to benefit from this approach.

[4] E-commerce Recommendation with Personalized Promotion

This paper proposes including personalized promotion in e-commerce recommender systems. We developed a lottery- auction mechanism to elicit consumers' willingness to pay on a small subset of products, and a machine learning model to predict each consumer's WTP on a wide range of other products. We demonstrated the feasibility of the proposed approach in an experiment with real world products from Amazon subjects recruited from Amazon Mechanical Turks. The results suggest that

[5] personalized promotion leads to significantly higher profits for sellers compared to the baseline pricing. A Fuzzy Logic Based Personalized Recommender System

In this paper, we propose a personalized attribute-based recommender system as a solution to less frequently purchased products. Our proposed system incorporates a set of techniques for mining the requirements of customers and the attributes of laptop products, in order to recommend optimal products to prospective buyers of laptop computers. The system is able to provide online buyers with information on the products that could best meet their individual needs. The system also has the potential of increasing sales for online businesses, thereby making online shopping more interesting and profitable to both buyers and sellers.

[6] Personalized recommender systems in e-commerce and m-commerce

A comparative study. In this study, a comparison between m-commerce and e-commerce recommender systems was presented using generic system framework for e-commerce and m-commerce personalized recommender systems. The most important dimensions or factors that are considered for the comparative analysis are user model, product and service model, recommender engine/algorithms, user

interface (I/O and interaction), and confidence and uncertainty models. It is shown that there are more similarities in components of the system architecture than variations between e-commerce and m-commerce. Moreover, additional requirements that are required to adapt the models, methods and techniques developed and advanced in e-commerce for e-commerce are identified and discussed.

[7] Development of a recommender system based on navigational and behavioural patterns of customers in e-commerce sites.

In this article, a novel CF-based recommender system is developed for e-commerce sites. Unlike the conventional approach in which only binary purchase data are used, the proposed approach analyzes the data captured from the navigational and behavioral patterns of customers, estimates the preference levels of the products which are clicked but not purchased, and conducts CF using these preference levels for making recommendations. The proposed approach also compares with the existing works on click-stream data analysis in which customers' navigational and behavioural patterns are analyzed for simple relationships. The proposed approach is versatile and can be applied to a variety of e-commerce sites as long as the navigational and behavioural patterns of customers can be captured.

[8] An E-Commerce Recommendation System Based on Dynamic Analysis of Customer Behaviour.

This paper presents a recommendation system that is used to solve the RS challenges. These challenges involve cold-start, sparsity, diversity, and scalability. As presented in related works, this paper treats some of these challenges but not all of them. The proposed system employs statistical methods and analysis to compute several features (customer behavior) to build a recommendation list that provides recommendations close to the customers' preferences. The experimental results showed, in comparison with other systems, a better performance. As future work, a questionnaire could be used to collect the customers' opinion after purchasing a product by asking the customers several directed questions that could help to improve the website performance and provide good feedback for the recommendation system.

3. ELECTRONICS SELLING WEBSITE

3.1 Overview

The system overview is presented in this Section. The classification of various techniques the domain. This diagram illustrates the flow of the proposed system for an e-commerce website. Users will start by registering and logging into their accounts. They can then browse the product catalog, search and filter products based on their preferences, and add products to their shopping cart. Once they are ready to purchase, they can proceed to checkout and enter their shipping and payment information. After the order is placed, users can track their order status and leave reviews and ratings for the products they have purchased. Finally,

if they have any questions or concerns, users can contact the customer support team for assistance.

3.1.1 Existing System Architecture

Overall, this existing system architecture for an e-commerce website consists of a front-end user interface, a web server and database server to handle data processing and storage, a payment gateway to process payments, a shipping and logistics component to handle order fulfillment, and a customer support component to address user concerns.

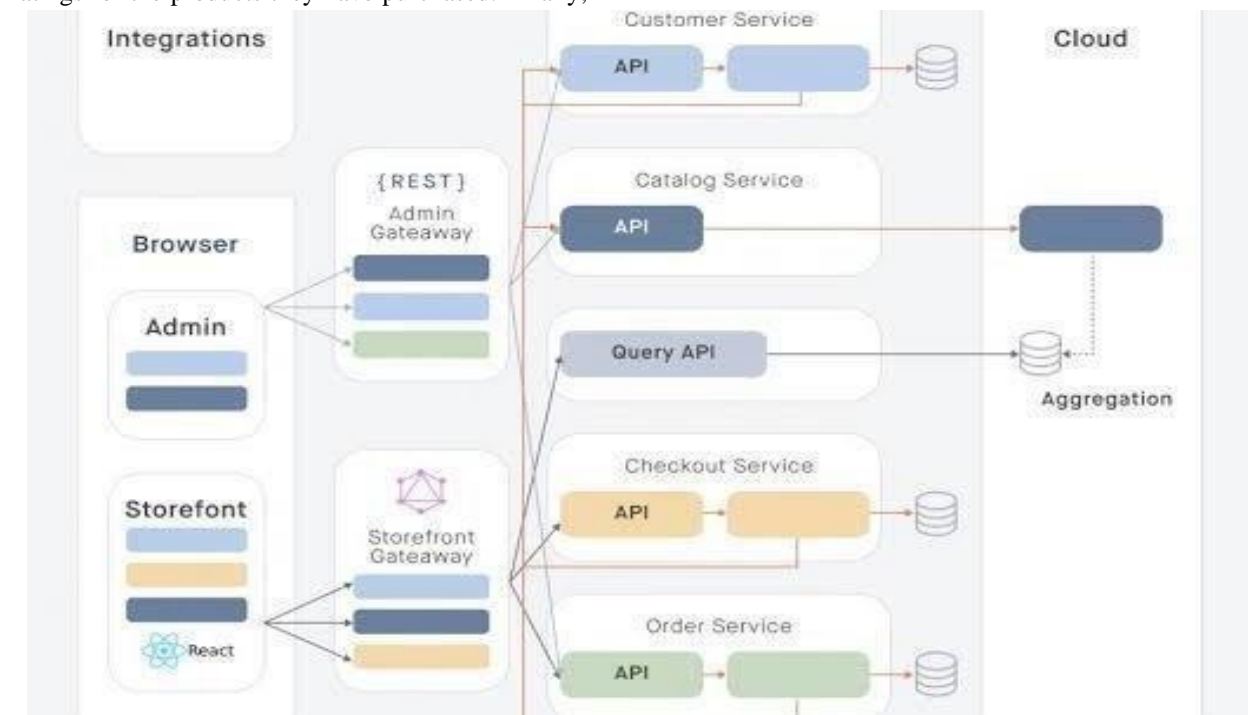


Fig. 3.2 Existing system architecture used for Content based Systems

User Interface:

The user interface is the front-end part of the e-commerce website that users interact with. It includes the design, layout, and functionality of the website, such as the product catalog, shopping cart, and checkout pages.

Web Server:

The web server is the back-end component that hosts and serves the website to users. It receives and responds to user requests, handles data processing and storage, and communicates with other servers and databases as needed.

Database Server:

The database server is responsible for storing and

managing the website's data, such as user information, product catalogs, and order histories. It communicates with the web server to retrieve and update data as needed.

Payment Gateway:

The payment gateway is a third-party service that processes online payments securely. It encrypts user payment information and communicates with the user's bank to authorize and complete the transaction.

Shipping and Logistics

The shipping and logistics component handles the delivery and fulfillment of orders. It communicates with shipping carriers to generate shipping labels and

track packages, and updates the order status on the website.

Customer Support:

The customer support component provides assistance to users who have questions or issues with their orders. It includes a support ticket system, live chat, and phone support to address user concerns and ensure customer satisfaction

Application Server:

The application server is responsible for processing user requests and handling the business logic of the e-commerce website. It communicates with the database server to retrieve and update data as needed, and with external services such as payment gateways and shipping carriers.

Database Server:

The database server is responsible for storing and managing the website's data, such as user information, product catalogs, and order histories. It communicates

with the application server to retrieve and update data as needed.

Payment Gateway:

The payment gateway is a third-party service that processes online payments securely. It encrypts user payment information and communicates with the user's bank to authorize and complete the transaction.

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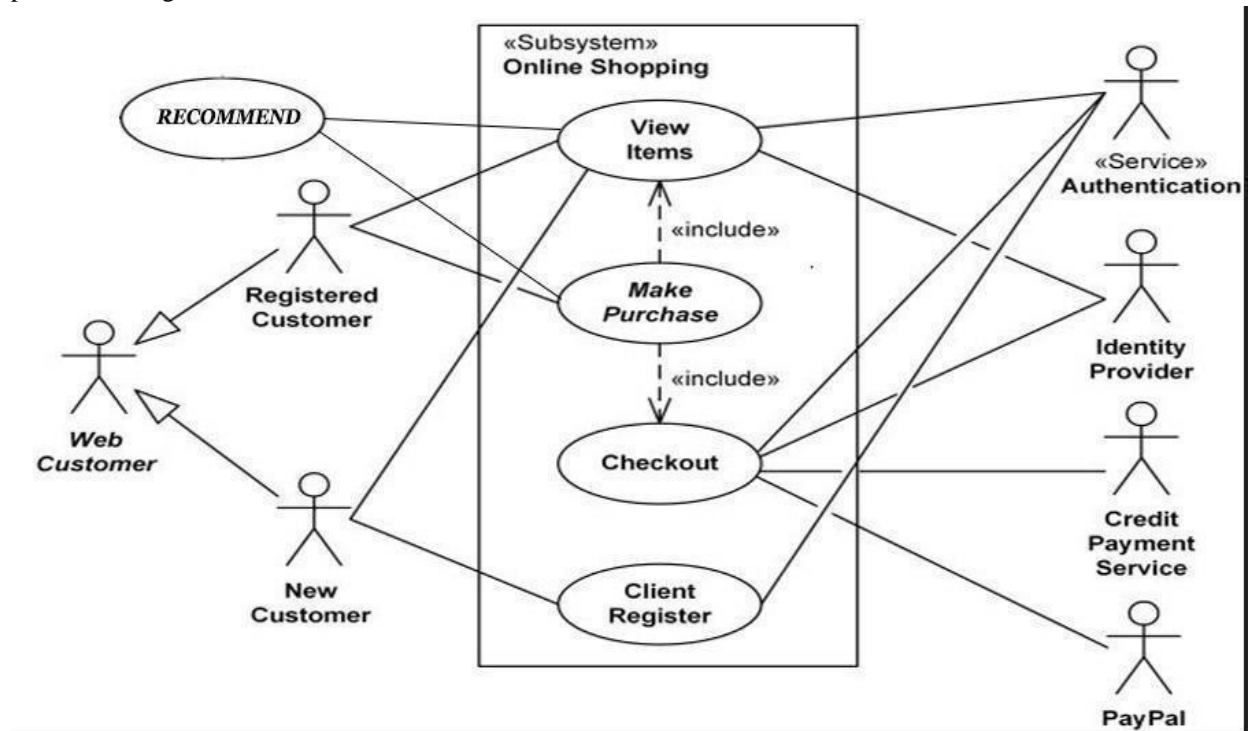


Fig. 3.3 Proposed system architecture

Overall, this proposed system architecture for an e-commerce website consists of a front-end user interface, an application server to handle business logic, a database server to store and manage data, a payment gateway to process payments, a shipping and logistics component to handle order fulfillment, and a

customer support component to address user concerns. The application server acts as a mediator between the user interface and other components, ensuring seamless communication and interaction between the different parts of the system.

Retail e-commerce sales worldwide from 2014 to 2025 (in billion U.S. dollars)

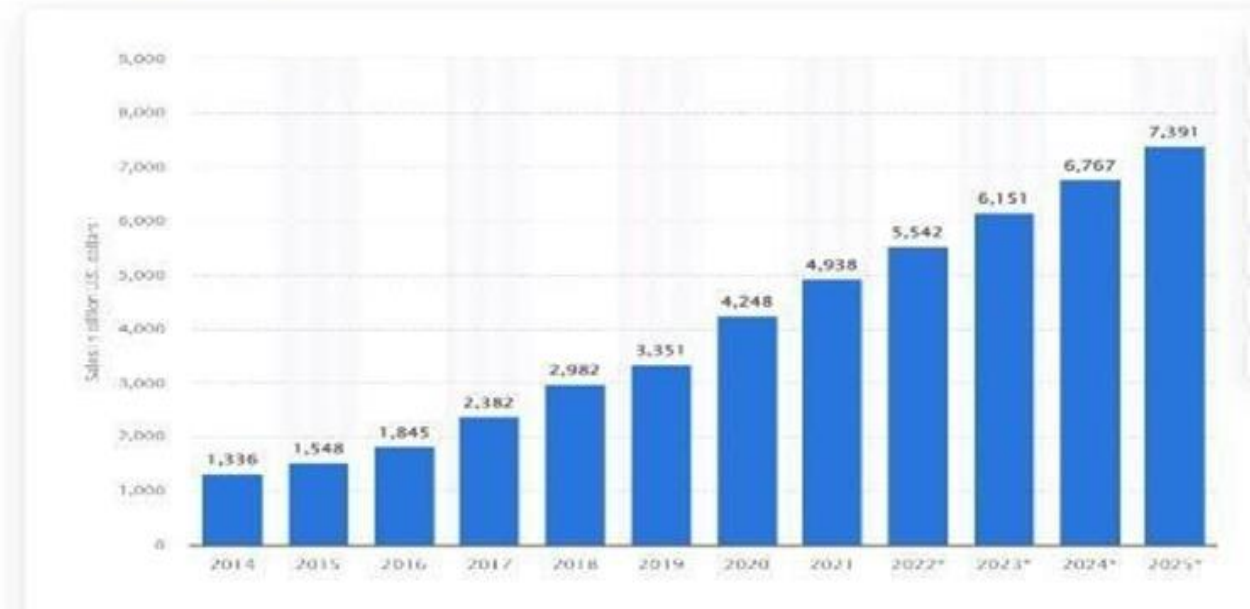


Fig 3.4: Usage of eCommerce

3.2 Implementation Details

The implementation of the proposed system architecture for an e-commerce website may involve the following steps:

User Interface Design:

Design and develop a user-friendly interface for the e-commerce website, including features such as product catalogs, shopping cart, and checkout pages.

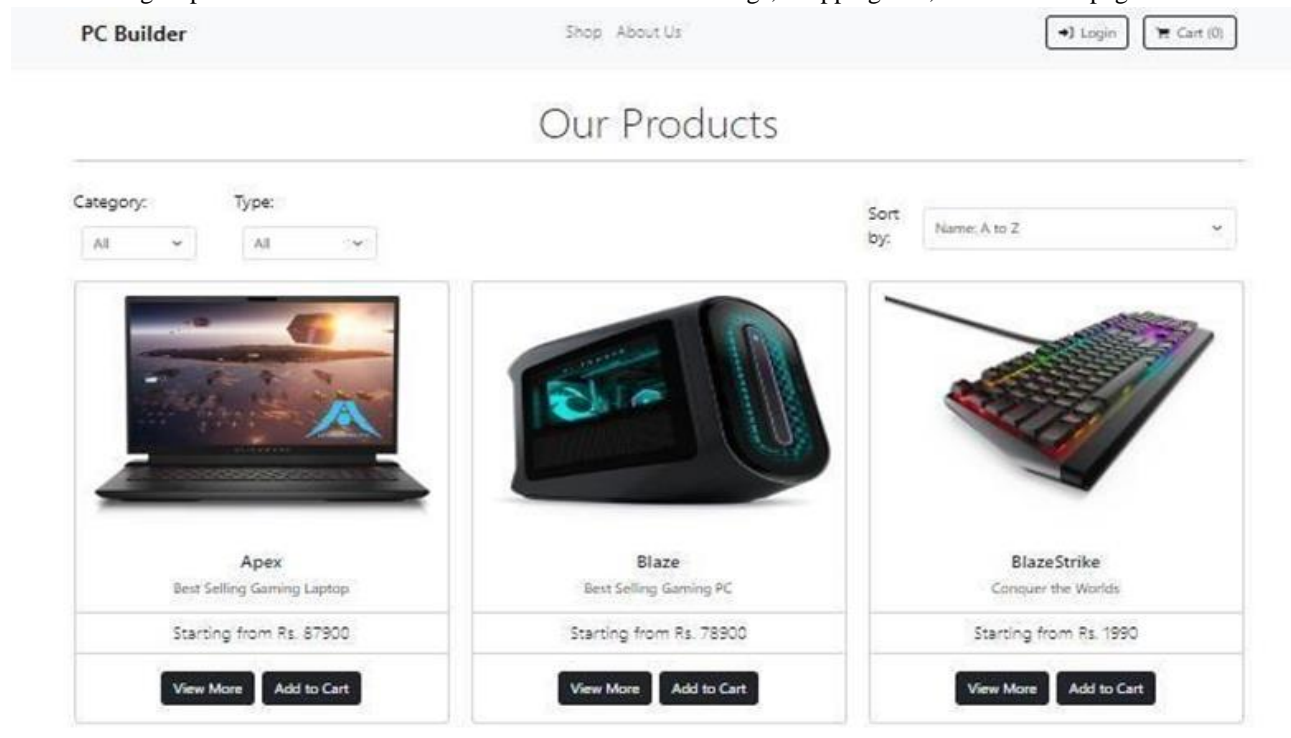


Fig 3.5: User Interface

Application Server Development:

Develop the application server using a programming language such as Java, Python, or Ruby. The application server will handle the business logic of the

e-commerce website, including processing user requests, communicating with the database server, and integrating with external services such as payment gateways and shipping carriers.

Login

The image shows a login form with the following elements:

- Email address:** A text input field containing "name@example.com".
- Password:** A text input field containing "Password". To the right of the field is a "Show" button.
- Registration Link:** Below the password field, the text "New Here? [Register Now](#)" is displayed.
- Login Button:** A dark grey button with the text "Login" is centered below the registration link.

Fig 3.6: Login Interface

Database Server Setup:

Set up a database server to store and manage the e-commerce website's data, such as user information, product catalogs, and order histories. Choose a reliable database management system such as MySQL, Oracle, or MongoDB.

Payment Gateway Integration:

Integrate a payment gateway such as PayPal, Stripe, or Braintree to securely process online payments and complete transactions.

Shipping and Logistics Integration:

Integrate with shipping carriers such as UPS, FedEx, or DHL to handle the delivery and fulfillment of orders. Implement features such as package tracking and order status updates.

Customer Support Setup:

Set up a customer support system, including a support ticket system, live chat, and phone support, to address user concerns and ensure customer satisfaction.

Testing and Deployment:

Test the e-commerce website thoroughly to ensure it is bug-free and meets all requirements. Deploy the

system to a production environment, such as a cloud-based platform or dedicated server, for public use.

3.3 Implementation Techniques

There are several techniques that can be used in the implementation of an e-commerce website in the proposed system architecture. Some of these techniques include:

Agile Development:

Agile development is an iterative and flexible approach to software development that focuses on delivering working software quickly and frequently. This technique is particularly useful for e-commerce websites because it allows for quick adaptation to changing business requirements and user needs.

Responsive Design:

Responsive design is a technique that ensures that the e-commerce website's layout and content adapt to different screen sizes and devices, such as desktops, laptops, tablets, and smartphones. This technique ensures that users have a consistent and optimal experience regardless of the device they are using to access the website.

Search Engine Optimization (SEO):

SEO is a technique that involves optimizing the e-commerce website's content and structure to improve its visibility and ranking on search engine results pages (SERPs). This technique can help attract more organic traffic to the website and increase the likelihood of conversions.

Security Measures:

Security measures such as SSL/TLS encryption, firewalls, and secure payment gateways can help protect the e-commerce website and its users from cyber threats such as hacking, phishing, and data breaches. It is important to implement these security measures to ensure the safety and privacy of users' sensitive information.

A/B Testing:

A/B testing is a technique that involves testing two versions of a web page to determine which version performs better in terms of user engagement, conversion rates, and other metrics. This technique can help optimize the e-commerce website's design and content for maximum effectiveness and user satisfaction.

Personalization:

Personalization techniques such as personalized recommendations and customized shopping experiences can help increase user engagement and loyalty. These techniques use user data such as browsing and purchase history to tailor the e-commerce website's content and offerings to the individual user's preferences and needs.

Use Case

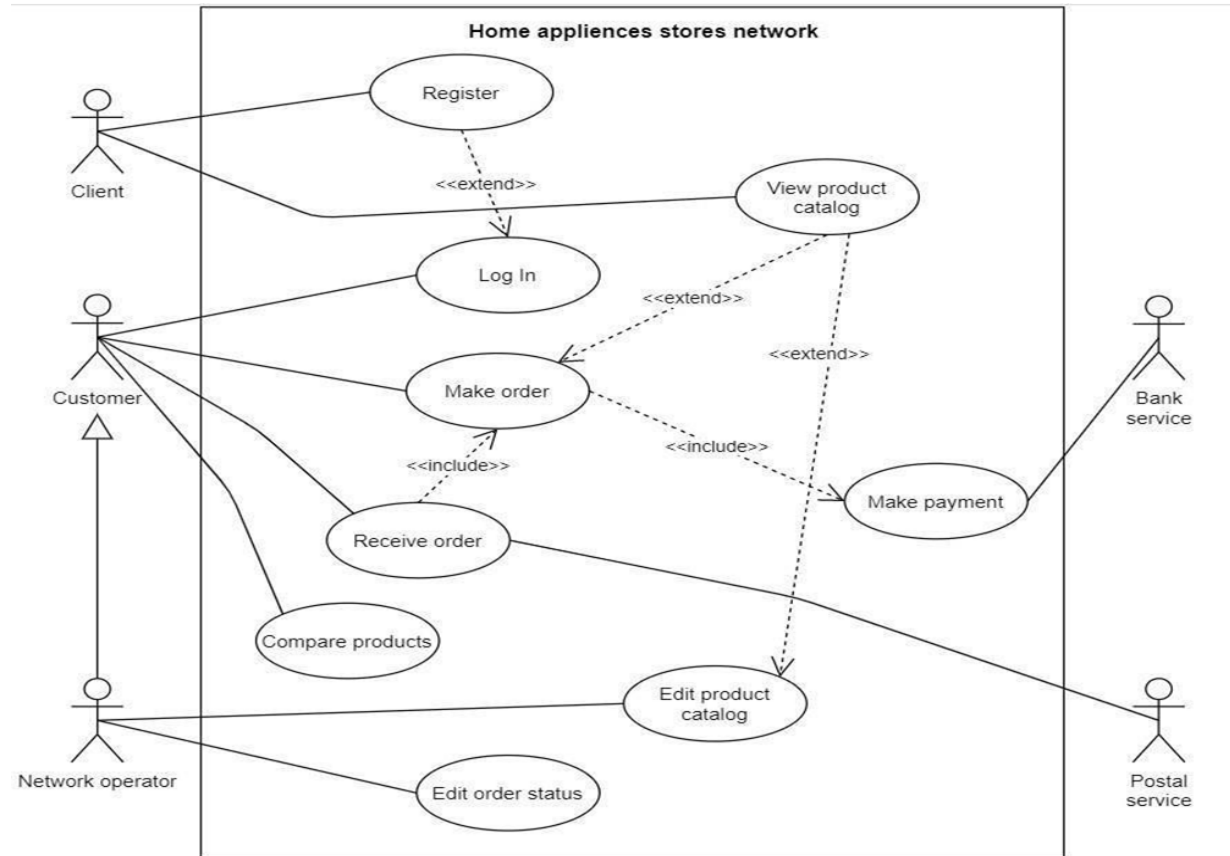


fig:3.8 Use Case diagram for e-commerce website

In this use case diagram, the actors are the User, Admin, Payment Gateway, Shipping Carrier, and Customer Support. The use cases include browsing products, adding to cart, checking out, managing

account details, adding products, managing orders, generating reports, processing payments, handling order shipping, and addressing customer issues. The diagram illustrates the relationships and interactions

between the actors and use cases in the proposed system architecture¹⁶ for an e-commerce website.

4.RESULT AND DISCUSSION

There are various applications of this domain system. The application is listed here.

Online shopping:

An e-commerce website provides customers with a convenient way to shop online for products and services. Customers can browse through various categories of products, add items to their shoppingcart, and complete their purchase through a secure payment gateway.

B2B sales:

E-commerce websites can also cater to business-to-business (B2B) sales by providing a platform for businesses to purchase products and services from other businesses.

International sales:

An e-commerce website can offer international sales, allowing businesses to expand their reach andcater to customers from around the world.

Inventory management:

E-commerce websites can help businesses manage their inventory by providing real-time updateson stock levels and automated restocking options.

Customer relationship management:

E-commerce websites can also help businesses build and maintain customer relationships through personalized marketing, customer service, and loyalty programs.

Data analysis and insights:

E-commerce websites generate a vast amount of data, which can be analyzed to gain valuabl insights into customer behavior, sales trends, and product performance. This data can help sinesses make informed decisions and improve their overall performance.

Overall, an e-commerce website can offer several applications and benefits for businesses, including increased sales, improved customer relationships, and better data analysis capabilities.

Evaluation Parameters:

1. User Experience (UX):

Navigation and Ease of Use: Evaluate how easy it is for users to find products, navigate the site, and complete tasks.

Responsiveness: Ensure that the website functions well on different devices and screen sizes.

2. Algorithm Performance:

Recommendation Quality: Assess the accuracy and relevance of product recommendation algorithms.

Search Accuracy: Evaluate the effectiveness of the search algorithm in returning relevant results.

Personalization: Check how well the website tailors the user experience based on user behavior and preferences.

3. Content and Product Information:

Product Descriptions: Ensure that product descriptions are clear, detailed, and accurate. Images and

Multimedia: Evaluate the quality and relevance of product images and videos.

Product Variations: Check if the website effectively handles different product variations.

3.4 Conclusion and Future scopeConclusion

In this report, the study of different domain techniques is presented. The different techniques such as Agile Development, Search Engine Optimization (SEO), A/B Testing, and Responsive Design is explained. The existing system are also described. The comparative study of various techniques mentioned above is presented in this report. The existing system is proposed with new feature modification. The performance measures like precision and recall are described in this report. The different standard datasets or variableinputs are defined that may be used in experiment for this domain system. The applications of this domain are identified and presented.

FUTURE SCOPE

The addition of an AI chatbot and GPS tracking to your electronics selling website can greatly enhance its functionality and user experience. Here are some future scope ideas foryour project:

Personalized Product Recommendations:

Implement AI-driven product recommendation

engines that analyze user behavior, preferences, and purchase history to suggest relevant electronics products to each user. This can significantly improve conversion rates and customer satisfaction.

Virtual Shopping Assistants:

Develop AI chatbots with advanced natural language processing capabilities to act as virtual shopping assistants. These chatbots can answer customer inquiries, guide them through product selection, and even process orders seamlessly.

Predictive Inventory Management:

Utilize AI algorithms to predict demand for various electronic products based on historical data, seasonality, and market trends. This can help you optimize your inventory, reduce overstock, and ensure popular items are always in stock.

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