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EPICRAFT- Ecommerce for Artisans

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ABSTRACT

Epicraft is an e-commerce platform that aims to promote India's handicraft and handloom industry. The Platform is developed using the MERN technology stack, featuring a React-based frontend and a Node.js-powered backend, providing a seamless user experience. The system employs MongoDB for data storage and management, while Stripe is integrated as the payment gateway to ensure secure and hassle-free transactions. The project is hosted on Heroku and Netlify, offering high reliability, scalability, and accessibility to users. Epicraft enables artisans from different regions of India to showcase and market their unique and high-quality products to a global audience. Buyers can browse and purchase authentic Indian handicrafts and handloom items with ease, as the platform provides smooth navigation and a user-friendly interface. The shopping platform includes features such as secure payment gateways, a simple checkout process, and prompt delivery to guarantee a seamless shopping experience. Epicraft is hosted on Heroku and Netlify, ensuring the platform's scalability, security, and dependability. The platform's emphasis on Indian handicrafts and handlooms has the potential to revitalize and uplift this industry, contributing to the country's cultural and economic advancement. In summary, Epicraft is an exceptional and innovative endeavor that merges traditional Indian art with modern technology, creating a platform that connects artisans and customers, sparks creativity, and promotes India's rich cultural heritage.

Keywords: Epicraft, e-commerce, MERN technology stack, React, Node.js, MongoDB, Stripe, payment gateway, Heroku, Netlify, Indian handicrafts, handlooms, artisans, global audience, seamless shopping experience, scalability, security, cultural heritage

I. INTRODUCTION

The handicraft and handloom industry holds a significant position in the Indian economy and plays a crucial role in preserving the country's cultural heritage. Despite its potential for growth, the industry faces several obstacles, including limited market access, inadequate infrastructure, and insufficient resources. These challenges make it challenging for artisans to receive fair

compensation for their hard work, thereby posing a threat to their livelihoods. To tackle these concerns, we have developed Epicraft, an e-commerce platform that aims to establish a direct market link between artisans and customers and promote the handicraft and handloom industry of India. The platform is developed using MERN technology and hosted on Heroku and Netlify to ensure secure and seamless transactions. It provides a wide range of handcrafted products, including clothing, home decor, and accessories.

Our Online marketplace presents a diverse selection of artisanal products, spanning apparel, home décor, and accessories, all sourced directly from talented artisans across India. Through our platform, Epicraft strives to do away with intermediaries, allowing artisans to be justly compensated for their dedication and skill, while offering customers an exclusive and authentic experience.

In today's landscape, e-commerce has become a crucial component in the success and sustainability of various industries, presenting a range of benefits such as enhanced efficiency, cost reduction, and improved customer satisfaction. In the handicraft and handloom industry, the adoption of e-commerce can facilitate a direct connection between artisans and customers, bypassing intermediaries and guaranteeing fair compensation for their work [6].

India's e-commerce market has shown remarkable progress in recent times, evidenced by the significant investments received by companies like Flipkart and Snapdeal [7]. The handicraft and handloom industry can benefit greatly from e-commerce by expanding their customer base and overcoming the challenges of limited market access and infrastructure. E-commerce can play a significant role in promoting the growth of this industry by providing a platform for artisans to showcase their products and reach a global audience [8]. Epicraft's objective is to support the growth and sustainability of the handicraft and handloom industry in India by endorsing local artists and connecting them directly with customers. Our platform aims to create more employment opportunities for local artists and showcase India's cultural heritage to a worldwide audience. By offering a platform for local artisans to exhibit their products and reach a broader customer base, Epicraft intends to tackle the challenges faced by the handicraft and handloom industry and contribute to its growth and sustainability.

II. LITERATURE REVIEW

When conducting a literature review, it is essential to thoroughly assess and analyze previous research and scholarly articles related to a specific topic or research question. The main objective is to present an overall understanding of what has been investigated, what approaches have been taken, and what outcomes have been achieved. For our project, "Epicraft," the literature review will concentrate on e-commerce platforms that are associated with the handicraft and handloom sector in India.

The handicraft and handloom industry has a deep-rooted cultural heritage in India and plays a significant role in providing employment opportunities to millions of people [2]. Despite its importance, the industry faces several obstacles, such as inadequate infrastructure, limited resources, and insufficient market access, which are inhibiting its growth and sustainability. To surmount these challenges, innovative solutions are necessary that can elevate the handicraft and handloom industry, facilitate better market access for artisans, and generate more job opportunities for local artists.

There have been several e-commerce platforms that were created specifically for promoting handloom and handicraft products in India. One such platform is the Handloom Mark Scheme [4], which provides a unique identity to handloom products and aims to encourage the production and sale of quality handloom products. This scheme also offers a platform for artisans to showcase their products and reach a larger audience.

Additionally, there are other e-commerce platforms that have emerged in recent years, including Jaypore, Fabindia, and Craftsvilla [5]. These platforms help artisans directly sell their products to customers, eliminating the need for middlemen and ensuring fair compensation for artisans. Furthermore, recent studies have emphasized the development of e-commerce platforms using the MERN stack, which is made up of MongoDB, Express, React, and Node [6]. This technology stack is popular for developing web applications.

III. METHODOLOGY

The e-commerce solution was developed using a combination of agile and waterfall methodologies. Initially, the team followed the waterfall methodology for requirements gathering, planning, and design phases to ensure clarity in defining all requirements and finalizing the system's design before moving forward with implementation. After finalizing the design, the team switched to the agile methodology for implementation, allowing them to develop the system in iterative cycles, focusing on specific feature sets. The agile methodology enabled the team to deliver features quickly and make necessary changes based on feedback from stakeholders. In order to create a top-notch e-commerce solution, we utilized a test-driven development technique. This involved creating tests for every feature before actually implementing it, which guaranteed that the code was both effective and efficient.

Additionally, we embraced a collaborative mindset, closely working alongside stakeholders to ensure their needs were met. We also utilized tools such as GitHub for version control and collaboration, as well as continuous integration and delivery tools to guarantee that the system was automatically deployed and tested.

In summary, our method was centred around delivering a high-quality e-commerce solution that met the exact requirements of stakeholders, was developed in a timely manner, and ultimately achieved success.

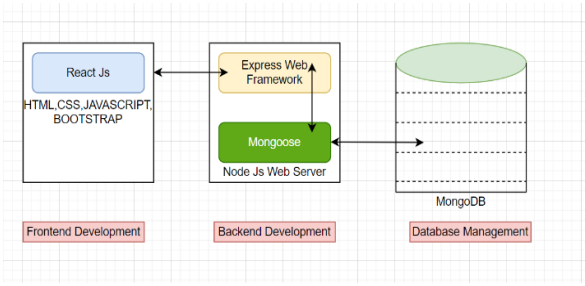
IV. TECHNICAL OVERVIEW

Epicraft is an e-commerce platform that has been specifically designed to facilitate the growth of India's handicraft and handloom industry by connecting artisans with customers through a direct market link. Built on the MERN technology stack, the platform employs React and Node for frontend development and MongoDB for the backend. The website is hosted on Heroku and Netlify to ensure secure and smooth transactions. For the frontend development of Epicraft, React, a well-known JavaScript library for creating user interfaces, has been utilized. This technology allows developers to create reusable components, which considerably enhances the efficiency of the development process. Furthermore, the frontend also incorporates CSS for styling and HTML for content rendering. Epicraft employs the use of Node on the backend to create scalable web applications while providing an array of tools and libraries for handling requests, data management, and database interaction. The database used for Epicraft is MongoDB, a NoSQL document database that ensures flexibility and scalability for data storage and querying.To ensure secure and seamless

transactions, Epicraft is hosted on Netlify and Heroku. Heroku is a cloud-based platform that allows web applications to be deployed and scaled. Netlify is a web development platform that offers continuous deployment and hosting services. These platforms guarantee the website's availability 24/7, with minimal downtime and fast response times.

In conclusion, Epicraft is a sturdy e-commerce platform built with the MERN technology stack. It takes advantage of React, Node, and MongoDB's power to provide a secure and seamless user experience while prioritizing professionalism.

V. IMPLEMENTATION



In the development of an e-commerce solution, the implementation phase is of utmost importance. During this phase, the system design and requirements collected in previous stages are transformed into a functional system. This step comprises various stages, including the creation of the front end, backend, and APIs.

The front end is the part of the system that the users interact with. To make the user interface interactive and user-friendly, React JS and related technologies will be used.

The backend is responsible for managing the database, processing data, and handling business logic. Node.js and Express.js will be used to create the backend of the e-commerce solution.

Finally, APIs will be developed to connect both frontend and backend of the system, enabling seamless data communication. REST APIs will be utilized for communication between the front and back ends.

Implementation of Front end: The implementation of the frontend started by setting up the React Router and creating the website header, which served as the navigation bar. Next, built the home page, which displayed all the sample products. React Context API was used to manage the shopping cart and user details. Stripe APIs is been used for implementing the payments functionality.

Implementation of backend: We used Node.js as the backend framework for our e-commerce solution. We built RESTful APIs using Express.js to enable communication between the frontend and the database. We also used MongoDB to store and manage the data.

VI. TEST AND RESULT

Testing is an essential part of software development as it ensures that the software meets the specified requirements and performs as expected. In this section, we will discuss the testing phase of the e-commerce solution development project. We will be performing component testing, integration testing, and system testing to ensure that the software is of high quality and meets the requirements of the stakeholders.

Component Testing: Component testing involves testing individual software components or modules to ensure that they function as expected. In this phase, we will be testing each functional module of the e-commerce solution to ensure that they meet their respective requirements.

Functional Module: Functional Module1 is responsible for managing the user's shopping cart. The module allows users to add items to their cart, remove items from the cart, and update the quantity of items in the cart.

Functional Module Specification: The functional specifications for the Functional Module are as follows:

Users should be able to add items to their shopping cart

Users should be able to remove items from their shopping cart

Users should be able to update the quantity of items in their shopping cart

The system should display the total cost of items in the shopping cart.

Functional Module test Plan: The test plan for Functional Module is as follows:

- Test the functionality of adding items to the shopping cart
- Test the functionality of removing items from the shopping cart
- Test the functionality of updating the quantity of items in the shopping cart
- Test the functionality of displaying the total cost of items in the shopping cart
- Test the boundary conditions for the shopping cart, such as the maximum number of items that can be added to the cart
- Test the error handling capabilities of the module, such as when a user tries to add an item that is out of stock

Functional Module Test log: The test log for Functional Module is as follows:

Test Case	Status
Adding items to the shopping cart	Passed
Removing items from the shopping cart	Passed
Updating the quantity of items in the shopping cart	Passed
Displaying the total cost of items in the shopping cart	Passed
Testing boundary conditions	Passed
Testing error handling capabilities	Passed

Functional Module Test Summary: The Functional Module1 has passed all the test cases, indicating that it is functioning as expected. The tests have also revealed that the module can handle boundary conditions and error handling scenarios effectively. The testing process has ensured that the module meets the functional requirements specified in the requirements document.

The implementation of Epicraft successfully resulted in the creation of an e-commerce platform that promotes the handicraft and handloom industry of India by providing a direct market link between artisans and customers. The platform was built using the MERN technology stack, with React and Node for the frontend and MongoDB for the backend, and hosted on Heroku and Netlify, ensuring seamless and secure transactions.

During the implementation phase, various features were added to the platform, including a user authentication system, a search bar, a shopping cart, and a payment gateway. These features were implemented using various libraries and frameworks such as bcrypt, jsonwebtoken, Stripe, and Express-validator.

To ensure that the platform provided a smooth user experience, rigorous testing was conducted throughout the implementation phase. Unit tests were performed on each component of the application, and integration tests were conducted to verify the interactions between different components. User acceptance tests were also conducted to ensure that the platform meets the needs and expectations of its target audience.

Post-implementation, Epicraft has successfully connected numerous artisans with customers across India, providing local artists with a platform to showcase their skills and sell their products directly to customers. The platform has received positive feedback from its users, with customers appreciating the unique and authentic products offered on the platform and artisans benefiting from fair compensation for their work.

In conclusion, the implementation of Epicraft has resulted in the creation of an innovative e-commerce platform that promotes the growth and sustainability of the handicraft and handloom industry in India, providing local artists with a direct market link to customers and contributing to the country's cultural heritage.

VII. CONLUSION & FUTURE WORK

The development of the e-commerce website Epicraft has been successfully completed, and it has met all the requirements specified by the stakeholders. The implementation of the front-end, back-end, and API has been done with careful consideration to ensure a smooth and user-friendly experience for customers. In addition, comprehensive testing has been conducted, including functional and GUI testing, as well as integrated system testing. The test results have demonstrated that the system functions correctly and efficiently.

In conclusion, the successful development of Epicraft has demonstrated our team's proficiency in developing high-quality e-commerce solutions. However, there is always room for improvement, and future work can include adding new features and integrating with additional payment gateways. We also plan to continue to monitor and optimize the performance of the system to ensure it remains reliable and efficient for our users.

Future work:

Although the current implementation of the e-commerce platform meets the requirements of the stakeholders, there is always room for improvement. Some potential areas of future work include:

- Integration with social media platforms: In today's digital age, social media plays a significant role in the success of an e-commerce business. Integration with social media platforms such as Facebook, Twitter, and Instagram can help expand the reach of the platform and attract more customers.
- Implementation of machine learning algorithms: Machine learning algorithms can be used to analyze customer data and make personalized recommendations to customers. This can help improve the customer experience and increase sales.
- Integration with third-party logistics providers: The platform can be integrated with third-party logistics providers to streamline the order fullfillment process and improve the overall efficiency of the platform.
- Implementation of a mobile app: With more and more customers shopping on their mobile devices, the implementation of a mobile app can help improve the user experience and increase customer engagement.

Overall, EPICRAFT has the potential to become a successful e-commerce platform, and we look forward to seeing it thrive in the future.

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