ONLINE KOLHAPURIS: A Trust-Centred Regional Ecommerce Marketplace for Authentic Kolhapur Products

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***Abstract*—Local artisans and small business owners often struggle to get their traditional products to a wider audience and build buyer trust. The ONLINE KOLHAPURIs was developed to help provide a solution to this issue by creating an e-commerce platform which will help to promote traditional products from Kolhapur, Maharashtra. The main aim of the project is to create a centralised selling platform for Kolhapur local artisans and sellers. The project will use the MERN stack to create this platform. This includes using MongoDB, Express.js, React.js and Node.js. The application will contain different modules such as customer, seller and admin. This application will allow users to purchase products, verify sellers, manage products, message sellers, manage their shopping basket, track orders and rate/review products. To manage images within the application Cloudinary will be used. To make payments online Razorpay will be used. To secure the application JWT authentication, bcrypt and role-based access will be used.**

This system allows local artisans and small business owners to have an easy to use and transparent purchasing experience. As it focuses on local artisans and products within a specific region it provides an alternative to general market platforms. The architecture, modules, technologies and testing requirements of the system are discussed. As there is no quantities data or survey data available at this stage further validation is required to prove the effectiveness of the platform. Functional testing, security testing, performance testing and user feedback will need to be carried out.

***Index Terms*—ONLINE KOLHAPURIs, E-Commerce, MERN Stack, Digital Marketplace, Local Artisans, Kolhapur Products, Seller Verification, Online Payments, Cultural Heritage.**

I. INTRODUCTION

With the fast development of digital technology and electronic commerce there are many opportunities for local businesses, artisans and small-scale producers to market their products online. Kolhapur is known for its traditional products such as Kolhapuri chappals, jaggery, spices, textiles and handicrafts. Local sellers might struggle to market their products online, as well as reaching a larger audience and gaining their trust. An online marketplace could help with these problems by providing a centralised marketplace for local regional products.

The ONLINE KOLHAPURIs e-commerce website aims to provide an online platform to help promote traditional products from Kolhapur. This will allow local sellers to connect with customers, increase product visibility, make online shopping easy and help local artisans and small businesses have an online presence. The website will consist of a customer, seller and admin section. Customers can browse products, sellers can be verified, customers can interact with sellers, products can be added to a basket, payment can be made online, orders can be tracked and customers can leave reviews. The website will be built using the MERN stack. This will include MongoDB, Express.js, React.js and Node.js. Product images will be managed using Cloudinary and payments will be done online using Razorpay. Security will be provided by using JWT authentication, bcrypt password encryption and role-based access. The main aim of this project is to create an easy-to-use regional marketplace to promote traditional products. Further testing will be needed to determine how effective this will be in practice.

II. LITERATURE REVIEW

The rise in e-commerce has enabled small businesses, rural entrepreneurs and artisans to advertise their products online. Previous literature has showed the importance of online marketplaces, digital payment systems, customer communication and product visibility for local businesses. The following studies are used to inform the development of ONLINE KOLHAPURIs.

1. Crafts-Connect: A platform to empower rural artisans and preserve cultural heritage (2024)

A study by Vijay et al. presents Crafts-Connect, a concept for an online marketplace. This study shows that online marketplaces can be used to help rural artisans by increasing the visibility of handmade products. The aim of this study is to increase the visibility of traditional products from Kolhapur and provide a targeted online marketplace for local sellers [1].

2. Designing an E-Commerce Web Application for Artisans of Tripura (2025)

Dutta and Majumder propose an e-commerce application for artisans in Tripura. This includes recommendation systems and online marketplaces. This study shows how targeted e-commerce applications can be used for local artisans. The ONLINE KOLHAPURIs platform aims to target specific products from Kolhapur such as chappals, jaggery, spices, textiles and more. It will also include seller verification and customer interaction [2].

3. Assessing Awareness and Adoption of E-Commerce and Online Transactions in Rural Areas of India (2024)

This study by Gupta et al. explores the awareness and adoption of e-commerce and online transactions in rural areas of India. It looks at how online shopping can be used with different payment methods such as card payments, UPI apps, net banking and digital wallet.

This study shows how important it is to understand how rural areas adopt digital technology. ONLINE KOLHAPURIs will have a simple user interface, product information, simple checkout process and secure payment process [3].

4. The Use of Chatbots in Digital Business Transformation: A Systematic Literature Review (2021)

This study by Miklosik, Evans and Qureshi look at 74 research papers on chatbots. This study looks at how chatbots can be used in digital business transformation. This study provides useful information on the importance of digital communication. ONLINE KOLHAPURIs will include customer interaction via chat with the seller to help customers with any questions they may have [4].

III. PROBLEM STATEMENT AND OBJECTIVE

3.1 Problem Statement

Kolhapur (Maharashtra) is well known for its traditional goods such as Kolhapuri chappals, jaggery, spices, textiles and handicrafts. Local artisans and small businesses may have issues getting their products to a wider audience. They may also struggle to get their business online and provide product information. Whilst general e-commerce sites can be used to sell their products online, it may not provide enough specific branding to highlight the variety of traditional products available.

Customers may also struggle to find trustworthy sellers, understand product details and where they are from. Having no one place to find products from the region, verify sellers, communicate with sellers, receive reviews and manage their orders can make the purchasing process unclear. To solve this issue, a specific e-commerce site has been proposed to sell traditional products from Kolhapur. This system will allow customers to buy from registered and verified sellers.

The system will include a product search, seller verification, customer to seller communication, secure payments, order tracking and product reviews to help improve access to regional products.

3.2. Research Objectives

The main objectives of this system are:

- Create a specific regional marketplace. An easy-to-use e-commerce site to showcase and sell traditional Kolhapur products.
- Improve access to market. Provide local artisans and small businesses with an opportunity to showcase their products online.

- Verify sellers. Create a verification system controlled by an administrator to ensure only verified sellers are being used.
- Provide communication between customers and sellers. Include an instant messaging system between customers and sellers.
- Secure payments. Include a Razorpay payment system.
- Encourage informed purchasing. Include product ratings and reviews so customers can understand the quality of the product and reliability of the seller. Customers will only be able to leave reviews if they have purchased the product.
- Include an administrator. Create an administrator section to manage users, verify sellers, review products, track orders and manage inappropriate content.
- Promote regional culture. Showcase traditional products using a specific digital platform.

IV. PROPOSED SYSTEM AND METHODOLOGY

A) Approach

This work uses an artefact-based approach to R&D. Firstly the target audiences and functional requirements were identified using the project synopsis and literature. Secondly the application was broken down into sections: presentation layer, API/application layer, data layer and external service layer. Thirdly the user-facing screens of the application were analysed using the screenshots provided. Fourthly a plan was devised to validate those areas which could not be confirmed from the screenshots. This approach is purely descriptive and was not a controlled experiment or benchmark.

B) System Architecture

The project spec specifies the use of a MERN stack. The frontend will be developed using React.js and Tailwind CSS. APIs will be published using Node.js and Express.js. Users, products, orders, payments, reviews and chats will be stored in MongoDB Atlas. Product images will be stored in Cloudinary. The payment gateway will be implemented using Razorpay. Version control will be done using Git and GitHub. Frontend and backend can be deployed using Vercel and Render. MongoDB will be accessed using a schema/data access layer such as Mongoose. The synopsis refers to this system having a three-tier and four-tier architecture; however, this document will outline the logical layers of the architecture shown in the diagram for clarity.

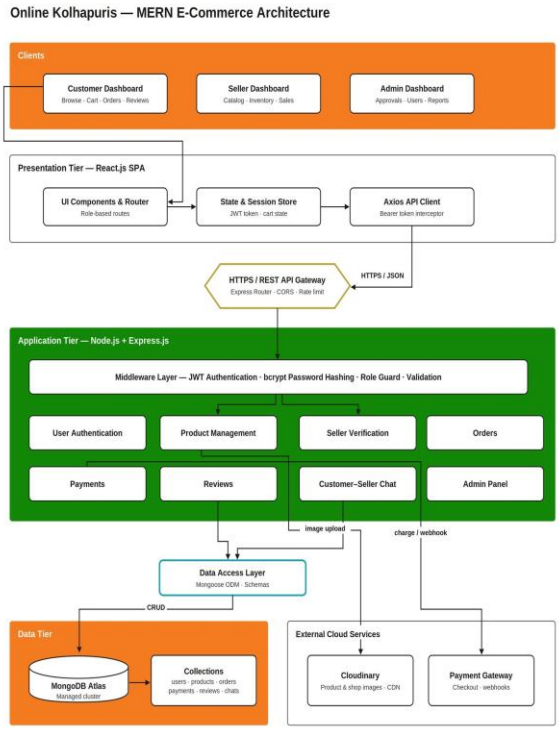


Fig. 1. Proposed ONLINE KOLHAPURIs MERN-stack architecture, reproduced from the project synopsis. The diagram specifies planned components and connections; it does not by itself establish successful runtime integration.

C) End to end transaction flow

ONLINE KOLHAPURIs | RESEARCH MANUSCRIPT User enters details into an account. Passwords are encrypted and hashed using the bcrypt algorithm by the server. Authenticated API requests will utilise signed JWT's. The hashing functionality is non-reversible so passwords should never be stored in clear text. Sellers apply by add their shop details and contact details along with supporting documents. They are put in a pending state until they are reviewed by an authorised admin user. Approved sellers should only be allowed to publish items. Approved sellers start by creating their catalogue listing with items names, categories, descriptions, prices, stock levels, photographs and origin details. Product photos are stored using a media service. Catalogue details are managed using a database. Customers can navigate

products by searching through categories and filters. Customers can message the sellers to ask any specific questions. Backend generates how much should be paid based on verified catalogue and fees. A payment is clicked open by the client but no actual confirmation of having paid should be assumed just because the success page has been displayed. Products are now progressed into by the sellers. This includes moving the order into set statuses which may include: pending, confirmed, packed, shipped and delivered. Reviews can be given for valid purchases only. Average star ratings are generated based on the data saved.

D) Data and Security

When integrating Razorpay the payment secrets need to be kept secure on the server side. The payment should be checked by server side to ensure it is signed correctly or the payment should be checked to see if it has been paid using an authoritative source. Webhooks should be made Idempotent to prevent any double orders or captures when notifications are sent multiple times. The following features are those ideally used in a live environment and we cannot confirm they have been done based on the screenshots. Documentation should be created around how long data is kept, how uploaded sellers' documents can be accessed, and what the process is for dealing with disputes. Trust can be given to products. Verified Seller badges should indicate the sellers' details have been checked. How much was verified and when should be noted. Top Seller should be given based on transparent criteria such as their fulfilment history and valid customer feedback. GI related badges should only appear on products/sellers that have had their rights checked. Kolhapuri Chappal registration does not automatically certify all food, spices, textiles and crafts [7].

Planning the information to store. Includes personal details, addresses, messages, order history and payment references. Server-side validation should take place to ensure users have the correct role to view all endpoints. Hiding the button cannot be considered an authorisation measure. Validation should occur on the endpoints from the API to ensure structured request data, limited access to objects, reduce opportunity for abusive requests. This follows common issues which arise with APIs - broken authentication, lack of object level authorisation, and incorrect security configuration [8].

V. SYSTEMS ARCHITECTURE

The project is built upon a decoupled 3 tier architecture. The frontend is built using React.js and Tailwind CSS. This will provide responsive pages to allow for customer access, seller and admin access to the system. The backend is built using Node.js and Express.js. This provides REST API endpoints, Session security using JWT and validation of data. The database layer makes use of MongoDB Atlas. The images are hosted using Cloudinary and payment made using Razorpay APIs.

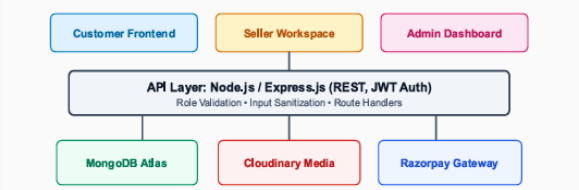


Fig. 1. *Layered MERN architecture and external service orchestration.*

A. USER MODULES

1)CUSTOMER MODULE:

This module manages user creation, product viewing, filtering, cart saving, checkout (server verified), order tracking, contacting sellers directly and reviewing products.

2)SELLER MODULE:

This module manages store creation, uploading documents for verification, managing inventory and products, responding to questions from customers and tracking shipments.

3)ADMIN MODULE:

This module allows for approval of sellers, monitoring of products on platform, ensuring provenance standards, moderating reviews and ensuring safe transactions.

VI. EVALUATION PLAN

A report stating system efficiency should demonstrate results that could be reproduced. The provided project evidence does not include any user study records, API logs, response time measurements, records of payment tests, results of any security scanning, or any survey results. Therefore, all experiments below are proposed validation processes rather than executed experiments.

For the pilot study, the team should determine the participant recruitment method, the consent process, the test environment, and characteristics of devices/networks, the version of the test case, the rules of the data cleaning process, and the method of data analysis prior to data collection. The results should be accompanied by information on the size of participants and uncertainty where applicable. In order to compare sales before and after the platform, one should have a proper baseline, use constant observation windows, and take into account seasonality.

VII. LIMITATIONS AND FUTURE WORK

Evidence is limited to the synopsis, architecture and screenshots. The paper does not provide evidence of what modules have been fully implemented. There is no real evidence provided such as: User testing Sales Dataset Seller Survey Accessibility Testing Benchmarking Penetration Testing Payment Reconciliation. The screenshots contain example data for products, sellers, ratings, orders and prices. This needs to be replaced or verified to be using test data. This will ensure that it is not displayed publicly. Verification of sellers and GI/provenance claims must be documented and there should be an audit trail. Badges should not be misleading. Future work to be undertaken includes: Accessibility and Multi-lingual support (Marathi & English). Seller Onboarding Support Integration for delivery/logistics Analytics Recommendation features Carefully scoping a study into ONDC integration.

VIII. CONCLUSION

This paper introduced the concept of ONLINE KOLHAPURIs, a website aimed at promoting Kolhapur's product range digitally. To do so, it employs a structured system for buying and selling transactions involving customers, sellers, and system managers. The proposed architecture is based on MERN technology, which is used for organizing various business processes in online commerce: product search, seller verification, inventory management, communication between customers and sellers, payment processing, order tracking, and reviews. Some images of the prototype illustrate different modules of the website, including the catalog, promotion, and checkout module. It should be noted that the current paper only provides an overview of the proposed design and prototype; this paper does not demonstrate any quantitative data on usability, reliability, security, commercial effectiveness of the website, or its contribution to culture preservation. In the future, functional, security, performance, usability, and acquisition tests have to be carried out.

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