

E-commerce for Artisans

A report submitted in partial fulfillment of the requirements

Of

Mini-Project (IS65)

In

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By

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DEPARTMENT OF INFORMATION SCIENCE & ENGINEERING

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(AUTONOMOUS INSTITUTE AFFILIATED TO VTU)

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CERTIFICATE

This is to certify that the project work entitled **“E-commerce For Artisans”** is a bonafide work carried out by **Chirag G, Gaurav Sood, Mohammad Hasan Beg** bearing **USN: 1MS19IS038, 1MS19IS041, 1MS19IS70** in partial fulfillment of requirements of Mini-Project (IS65) of Sixth Semester B.E. It is certified that all corrections/suggestions indicated for internal assessment has been incorporated in the report. The project has been approved as it satisfies the academic requirements in respect of project work prescribed by the above said course.

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E-commerce for Artisans

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Abstract—India is a country of great cultural heritage and its cultural diversity provides plenty of great art and craft products. The handicraft industry uses conventional manual methods instead of advanced technology for making various items. It is an unorganized, decentralized, labor-intensive cottage industry. Though the handicraft industry employs millions of artisans, It is still minuscule with respect to the global industry

In this paper, an attempt has been made to make an E-commerce website for artisans to provide them a platform to sell their goods worldwide without any middleman. In this platform, users and artisans can create profiles, but admin privileges are given to the verified artisans who can modify their products according to their needs. Implementation of a recommendation engine has been made for artisans where they can get

suggestions of which products are getting more sold.

We will be using React.js, a popular javascript library for the frontend design with MongoDB being used for the database design. The recommendation engine is built on the basis of Cosine Similarity.

I. INTRODUCTION

An artisan is a skilled manual worker who crafts items that may be functional or decorative in nature. The use of hands and hand tools impart individuality and uniqueness to each item. The artisans are an important section of our society by providing us with beautifully crafted products, they enhance our aesthetic life. Besides, they are significant contributors to our national economy.

The term 'artisan' is used to refer to those people who work with ordinary or simple tools to make things for basic needs. They mainly use the locally available resources and make valuable products without the aid of machines. Thus artisans may be called skilled manual workers who imagine, plan and build things with their hands as per the demands of most of the local people.

Though the artisan industry is the largest employer of people in India, it was one of the heaviest hits during the pandemic due to the lack of technological infrastructure available needed for these craftsmen to take to the online market. This has threatened the livelihoods of millions as the industry is being replaced by commercially manufactured products that have large corporations producing and marketing them using the most appropriate tools in use. As a result of this, there is a serious need to connect the millions of artisans affected due to the eCommerce boom to the internet so that they may directly be in control of the selling and marketing of their products.

This study seeks to tackle this issue by building an e-commerce site tailored for these purposes where handicrafts can be sold directly by artisans without middlemen seeking to exploit the industry. One way of ensuring only genuine artisans can be sellers on this platform, is registration takes place through a nomination by the owner of the platform, i.e. some form of confirmation is required before seller privileges are given to users. This process may be automated to remove the dependence on the Admin. Another way of helping the sellers understand the performance of their products is to employ methods such as those involving user ratings, data analytics such as sentiment analysis and the like. Furthermore, a recommendation engine is implemented in order to alert the buyers of

similar products that may be available to the one they have purchased.

II. METHODOLOGY

A. Salient features

The following are the salient features that need to be implemented in our e-commerce platform:

- User authentication for both the seller and customers
- The sellers are given exclusive privileges not awarded to the buyers, for example, analytics and the ability to post products
- There are restrictions placed on the sellers as well so as to not influence the rating of products
- Sentiment analysis with the next recommendation actions for the artisan shall also be added
- Rendering of products based on categories to which a product belongs to on the Products page
- A recommendation engine based on cosine similarity

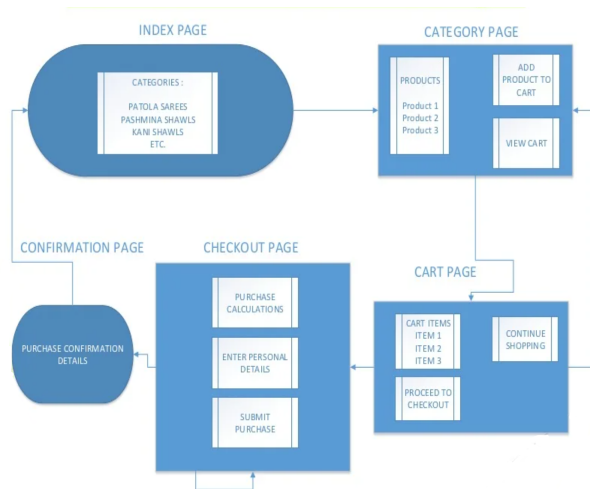
B. Cosine Similarity

The cosine Similarity Method has been used for the recommendation Engine. It is measured by the cosine of the angle between two vectors and determines whether two vectors are pointing in roughly the same direction. It is often used to measure document similarity in text analysis. The formula of cosine similarity is given by:

$$\cos(\theta) = \frac{\mathbf{A} \cdot \mathbf{B}}{\|\mathbf{A}\| \|\mathbf{B}\|} = \frac{\sum_{i=1}^n A_i B_i}{\sqrt{\sum_{i=1}^n A_i^2} \sqrt{\sum_{i=1}^n B_i^2}},$$

C. Architecture

The architecture of the website is as given below:



Customer's Side

- The default landing page of the website displays different categories of handicrafts
- The list of products is displayed under each category
- The checkout page contains the list of selected items a user wants to purchase along with pricing information

Artisan's Side

- The seller's page displays the products they have posted along with other details like purchases/orders/reviews/etc
- Sentiment analysis on a product's reviews is shown to the artisan

Authentication and Login

- A customer or a seller should be able to register and login in order to make purchases/sell their products
- Both a password-based and an OAuth login should be implemented

- Purchase and selling should be limited only to authorized users

Recommendation System

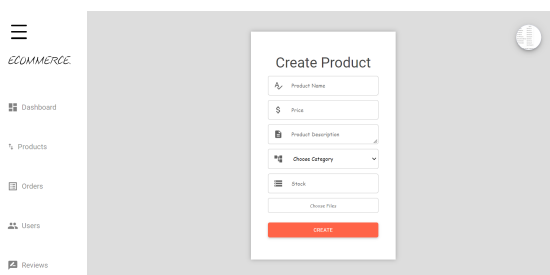
On the checkout page of the website, we have added a recommendation engine that shows products similar to the ones purchased by the customer.

III. Results and Discussions

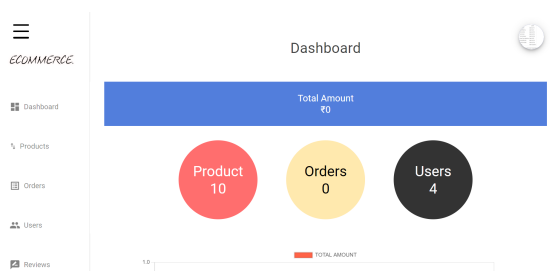
The Web Portal allows only the Artisans to upload the product, Being a centralised system only the Artisan is enabled to upload the Products and the Customers can purchase it. MERN Stack has been used for the Entire framework.

Artisan view

The Artisan can register Himself in the portal, as its centralised, the Controller can give him Admin privileges after verification which will then enable him to upload the product, Get an overview of all the payments done by the Customers and he can also Edit and delete the Products already posted onto the website.



Create Product page

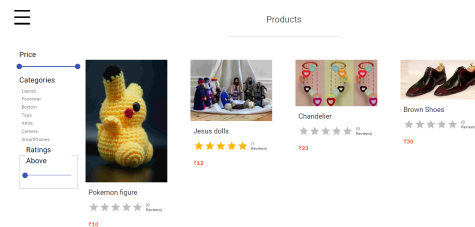


Dashboard page

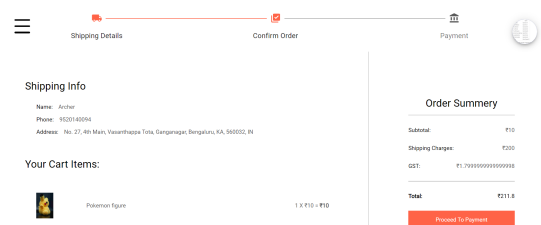
Customer view

The customer gets to view all the different products posted onto the website, Make use of filters to find the products he/she desires. Price, products specific filters and have been implemented in the project. Customers get an option to add products in the cart which can then later be checked out and the payment portal

for the Ecommerce website has also been implemented. Products similar to the ones purchased by him are displayed to him in the checkout section of the web portal.



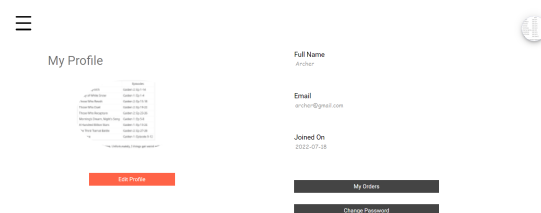
Products page



Checkout page

Admin view

The Admin of the portal has the powers to make other users as admin which would essentially be the Artisans in this case.



Profile page

Recommendation System

The cosine Similarity algorithm as explained will be implemented in this portion of the web portal. Depending on the name of the product purchased by the customer the algorithm starts to find Products with names similar to the ones bought and displays them in a separate section of the Checkout page

IV. CONCLUSION

The result of our implementation was a fully functional e-commerce website that allows users to authenticate themselves, view products, and purchase them. The buyers can also rate these products and leave reviews which are the subject of the Sentiment analysis shown to the seller. The sellers can also authenticate themselves by posting their products.

Future work may focus on automating the registration process where an intelligent system may use some form of identification to register the artisans.