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International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Hindavi Nursery

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ABSTRACT: In this project, we will create an internet-based plant store using MERN stack with the intention of making it easier to buy plans. Customers get unhappy because in most of cases the traditional nurseries do not have enough information about their plants, offer competitive prices neither do they have convenient ways through which clients may pay for goods bought. By providing different kinds of commodities such as plants, seeds, and decorative flowers which can be ordered at ones comfort, it is possible to solve this customer issue. The site has a good interface that allows users to view around without problems; read extended information on goods as well as compare prices easily and quickly by just clicking few buttons; It also provides portal for secure payments. sellers can have accounts, put goods for sale at prices whereas buyers are left with the freedom of making choices after considering several things in the process of buying what they want. This platform intends to ensure that customers keep coming back and attract new ones who will be taken through personalized communication. The main objective is not only selling plants but also creating loyal customers, helping business expand and supporting a society that loves plants.

KEYWORDS: Mern stack, Nursery, Website, Online Platform

I.INTRODUCTION

As e-commerce continues to grow rapidly, the plant nursery sector is moving onto electronic media more and more often. This is with the objective of facilitating ease in reaching out to clients who have a love for gardening as well as ensuring that their experience while shopping is made better. Bridging the gap between buyers and seller is possible through an online nursery which is a one-stop shop for different kinds plants, gardening equipment among other merchandise. With such an interface that can be operated with ease and that offers everything for sale including prices, it becomes possible for clients to move around, compare prices of commodities, see on them and make orders easily as per the requirements of the modern-day customer.

This chapter explains how to use MERN stack to develop an ecommerce platform for selling plants. The MERN stack is known for being adaptable, expandable, and capable of efficiently managing large-scale complex web systems; hence it provides a strong base upon which digital marketplaces can be built. Smooth navigation, personalized recommendations, and secure payment options are available features that customers enjoy while those selling have taken time to ensure they are safe and easy to use. Responsive websites or applications that can accommodate a huge number users and provide easy solution for communication aiming at involving customers. This objectives were intended to be achieved in this project through MERN implementation and use.

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Figure 1: plant nursery (image source- web)

It also considers some problems faced in creating trustworthy online platform like data control, safe payment, user identification process as well as tips for increasing its speed. Moreover, it looks into various literature materials concerning e-commerce as well as internet technology focusing on the role played by MERN stack integration toward improving customer experience within the online merchandising space.

II. LITERATURE REVIEW

Most of the writings done on e-commerce platforms are about how clients can be served better, data management as well as safe ways of paying online. The chapter examines the growth of electronic markets with an emphasis on certain features that can promote client attraction and retention in the era of digitalized exchanges such as; user-friendly interfaces, tight security, and customized merchandises (Smith et al. 2019). Other researches indicate that in e-retail, customer experience enhances user loyalty because easy and quick loading pages, as well as safe modes of payment, facilitate satisfactory shopping which may also be translated into purchases (Johnson et al., 2021).

Researches carried out on web development stacks have shown that the MERN stack is very useful in creating online stores. In his work "The MERN Stack: Revolutionizing Web Development" (Lee, 2020), it is explained that with MERN being adaptable, it is possible for developers to come up with flexible applications which work well under high loads including their interaction with users. This is because MongoDB has a NoSQL structure that can handle complex data models and many products, while React. js makes the user interface dynamic and interesting so as to improve interactivity. Other studies also indicate that the real-time property of Node. js as well as simplified and very efficient RESTful services provided by Express. js have a great positive effect on e-commerce platforms operating features (Kim & Zhao, 2021).

"Digital Transformation in the Nursery Industry" (Patel & Singh, 2022) looks at how technology has changed the way people buy plants from shops. The chapter looks at the increasing phenomenon of buying plants online and what customers of vegetation that are very inquisitive, demanding information enriched with particulars, relying on specialized opinions as well having pictorial indicators for assessing the health of the bought commodity (Patel & Singh, 2022). Comparatively, online plant nurseries have to overcome more difficult problems than other forms of e-commerce when it comes to inventory management because they deal with perishable goods that could easily go to waste and also they need to make sure that every image and description is correct (Gupta & Roy, 2020). As such, developing an efficient platform using the MERN stack that takes into account these subtleties would be a chance to satisfy this demand effectively.

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Moreover, e-commerce platforms that deal with important client's data need to be sure about one thing; they have safe ways of payment as well as clients' information. A study conducted by Liu and Martin (2023) on "Security and Privacy in Online Transactions" emphasized on the role of secure data protocol, multilayer access control in preventing information leakage and enhancing customer confidence. The retail sector greatly appreciates the fact that there can be easy incorporations of third-party security systems as well as payment gateways into MERN-based applications because it makes them very flexible.

These studies help us know what we need for an online nursery platform and why we chose the MERN stack for developing it. Expanding on previous investigations, this article examines customization of the MERN stack to improve e-commerce in a specialized garden centre.

III. SYSTEM DESIGN

Traditional system mostly consist of offline selling of plants. This method have very low reach towards costumers due to location issues, distance from costumers and lack of mobility. In today's fast paced world, such businesses tend to perform low. Also they have scalability issues and lack what the users in todays world need. Such time consuming business can cause significant loss to owner. To overcome this a system is proposed.

The planned web-based Nursery will be an all-inclusive online selling package. It is built on MERN stack to ensure that the resulting market space can expand infinitely, adapt to any device perfectly and be safe for all users buying plant-related items from it. By having a user-friendly interface which allows clients move around, this platform intends to make clients' shopping better; with options for viewing, buying plants and accessories easily. Moreover, it helps sellers strengthen their business by giving them an opportunity to offer goods for sale or lease through numerous channels.

System Architecture

The architecture is a three-layer setup that separates the frontend, backend, and database layers, optimizing scalability and modularity:

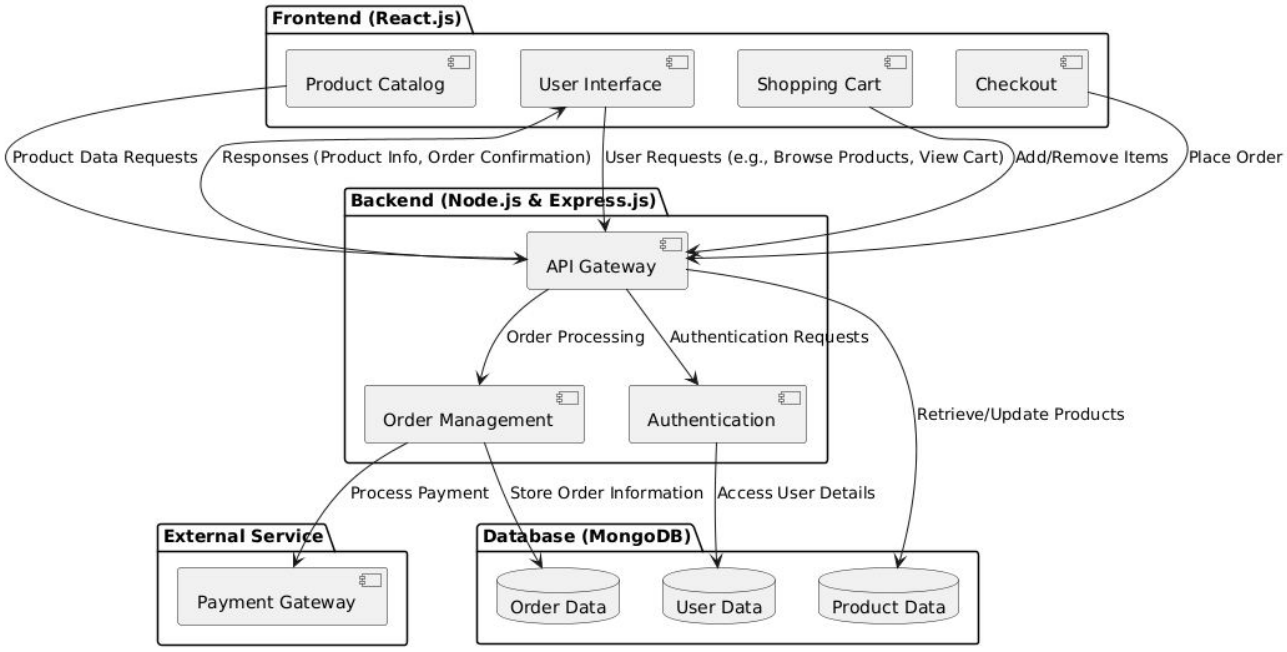

Fig 2: Proposed System Architecture

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- The frontend of the website is developed using **React.js** to provide an interactive user experience with features, like live product filtering and personalized recommendations based on individual preferences. Components have been created for product displays, shopping carts, user profiles and order management to improve usability and streamline the buying process.

- The backend (using Node.js and Express.js); The server component made with **Node.js** and **Express.js** creates APIs to assist in communication between the front end and back end of the system. This section manages business rules and Processes data along with user validation. It also incorporates a payment system, for secure transactions and manages user sessions to enhance security and user interaction.

- The platform stores data in **MongoDB**, a NoSQL database that houses product information, user details, order histories and inventory . MongoDB offers flexibility in handling data types and enabling scalability to manage extensive product and user loads efficiently.

- External payment gateway , Razorpay is integrated into platform for checkouts.

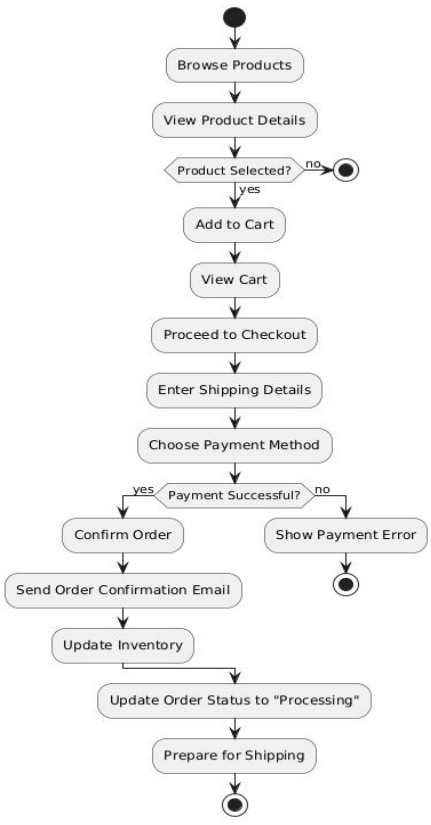

Fig 3 : Activity Diagram

Key Features

- **User Registration and Authentication**: A secure authentication system is employed in the platform that allows seller and buyers to register. To ensure secure login sessions and protected data entry, authentication uses JSON Web Tokens (JWT).

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- **Product Management for Seller:** Seller are able to include pictures, descriptions, pricing details as well as stock information of any goods they wish to sell. Seller can make changes, additions or deletions through the platform on their products thus facilitating easy management of their digital stores.
- **Product Search and Recommendation:** Users will be able to look through the inventory and sort it out by price, kind of plants available for sale and other characteristics. The system enhances the experience of the user by recommending products based on his/her browsing history.
- **Shopping Cart and Checkout**: It has a shopping cart function that allows users to include items, take them out again, or change their quantities, see total prices, then go on to order/pay. For smooth and safe transactions, the system interfaces third-party payment gateways that provide reliable payment processing.
- **Order Tracking and Notifications:** When customers place orders, they start getting notifications about its progress in real time. Confirmation messages, shipping monitors as well as delivery details are part of enhancing customer confidence and satisfaction.
- **Customer Reviews and Ratings:** Purchasers have an opportunity to give feedback and rate commodities so as to improve openness in the market and assist prospective clients in making right choices.

Benefits of the Proposed System

The proposed system offers several benefits:

Better User Experience: It uses React. js to provide a flexible and easy to use interface that will make clients happy and involved.

Ease of expansion and adaptability: With MongoDB and MERN stack, it is simple to increase the size of the catalog and number of users without seriously affecting how the site performs.

Improved Safety Features: A strong validation process, encrypted data, and integrated safe payment techniques guarantee an efficient market environment for purchasers as well as vendors.

Information Based on Data Collected: Inclusion of business intelligence ensures that sellers have informed facts for making choices that can increase turnover and loyalty of customers.

IV. OUTPUT

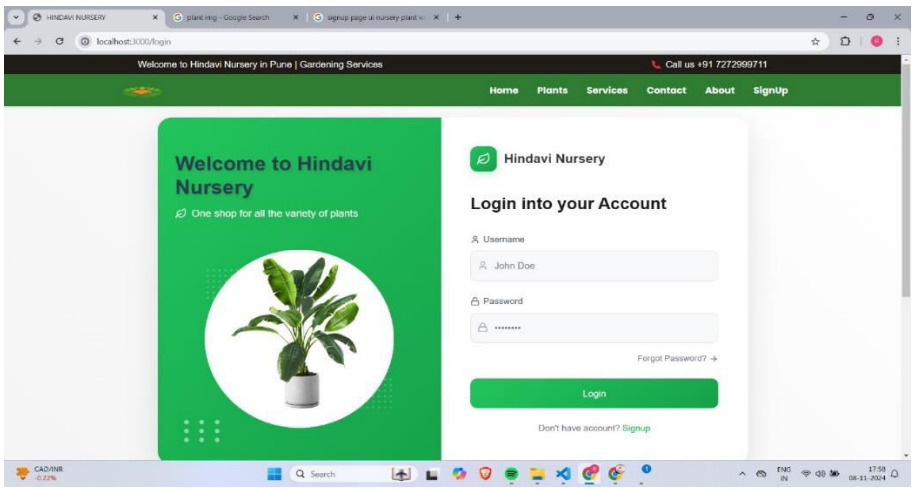

Fig.4: Login Page.

Login Page for Buyers to buy or add plants to cart.

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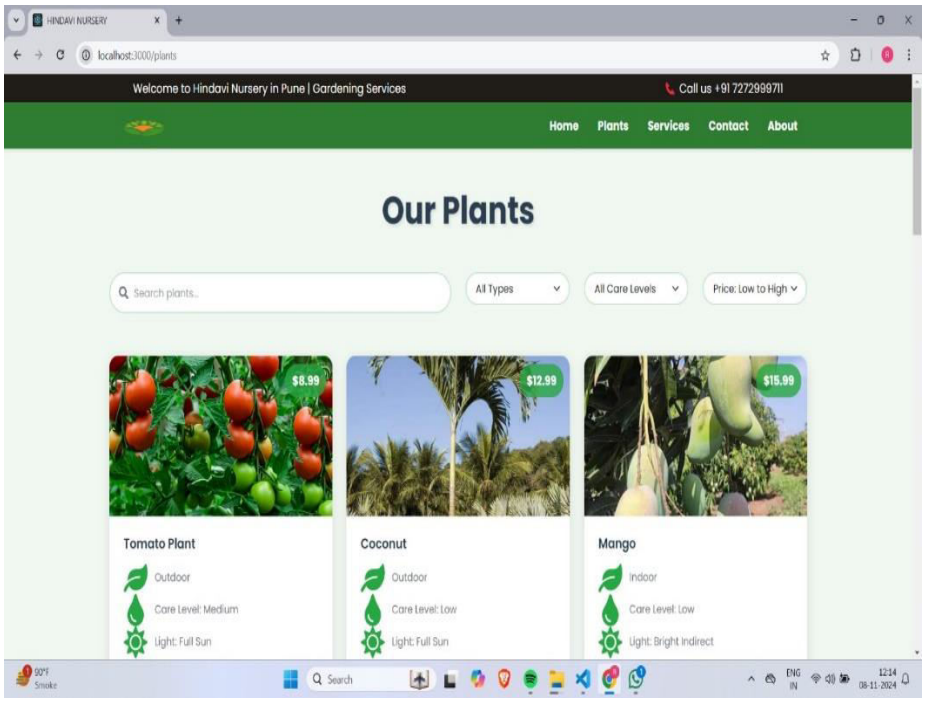

Fig.5: Plant and their information

Plant information page gives all the info about plants available.

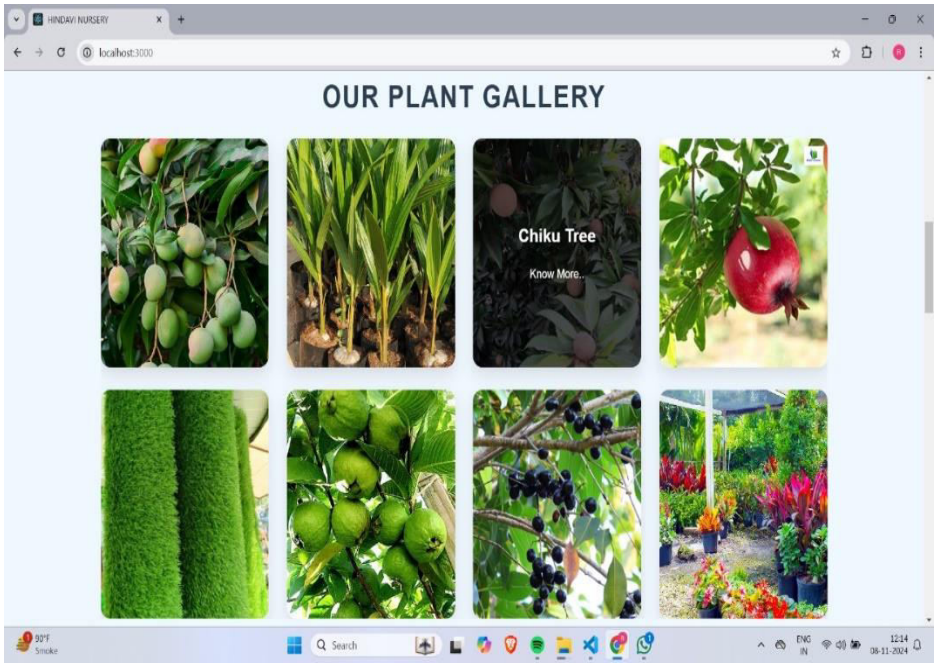

Fig. Plant Gallery

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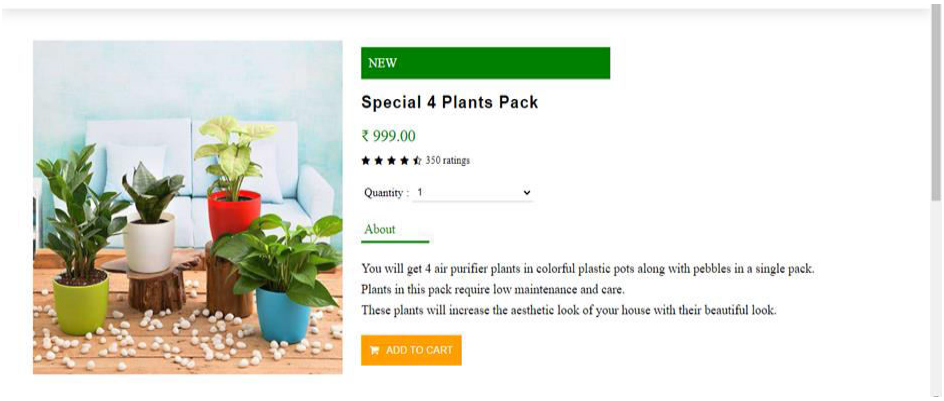

Fig.6: Checkout

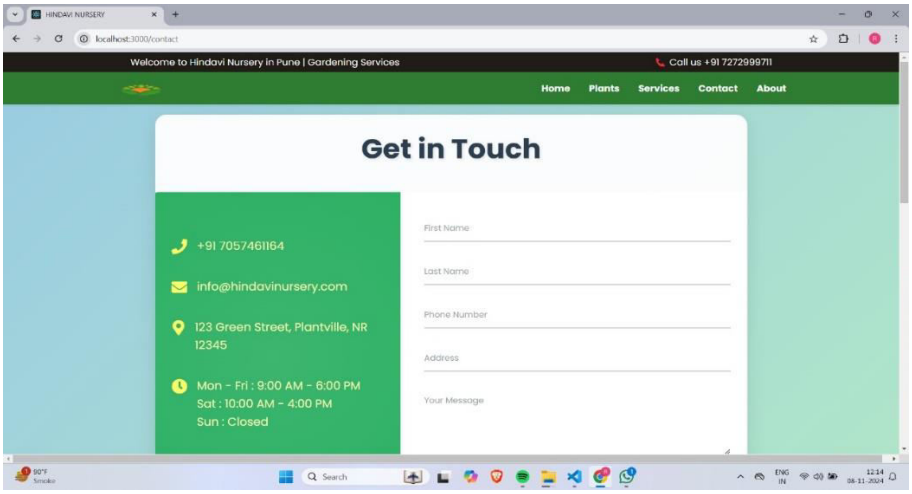

Fig.7: Contact owner

The gallery shows all the plants available in the nursery. Users can choose plants and opt for buying by proceeding to checkout. In case of any issues users can contact admin or owner via get in touch page.

V. CONCLUSION

The online nursery platform is a modern market place for all types of plants and their accessories. It was designed using the MERN stack, which ensures that it is fast, adaptable and expandable. With easy navigation from one point to another, proper stock control, safe ways of paying and customized services; it is favorable to buyers and sellers in the garden sector. This is achieved through incorporation of state-of-the-art technologies on both ends (front-end and back-end) of the platform to improve customer buying experience while giving vendors additional instruments for monitoring trade, reaching out to more customers, as well as tracking sales and inventory in an effective way.

To enhance security, scalability, and usability in the structure of the platform, MongoDB was preferred because of its ability to handle various types and complexities of data through a flexible approach like NoSQL. Additionally, Express and Node. js make up a strong backend that can handle many operations at once including those involving exchange of money in real-time. The presence of React guarantees that users will have a quick or immediate interface that they can easily use to look at products, put them side by side with others, and then decide on what to do with them.

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VI. FUTURE WORK

There are many upgrades that can take place in future when the online nursery platform is developed. This may involve improving how users do business. For instance, the platform could integrate an AI recommendation system that will recommend users with commodities to buy depending on various factors such as their buying behavior, previous transactions, and most importantly, garden preferences. Moreover, by incorporating augmented reality functionalities, one could make it possible for clients to see the plants within their surroundings so that they can decide on what to take to increase their satisfaction especially on ornamental or bulky vegetation. It would make sense for the platform to have a separate mobile application for both iOS and Android operating systems which could help reach more customers easily and also offer better services. Introduction of advanced analytics for sellers might provide knowledge on customer behavior, sales trends, and inventory control thereby assisting in making informed choices. Moreover, it would be faster and easier to follow up orders if there is real-time delivery tracking as well as partnering with logistic companies to ensure transparent order fulfillment.

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