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NFT-Driven B2C E-Commerce Website Innovation: A Study of the Effects of Blockchain Integration in the Deep Web

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Abstract: ***The MERN Stack is a set of strong and effective technologies for the creation of backend, frontend, and database-rich web applications. Full-stack web development is quick and effective thanks to JavaScript. The MERN Stack, a JavaScript-based platform that integrates MongoDB, Express, React, and Node.js, streamlines and accelerates the development of fullstack online applications. Its main goal is to simplify and make the development process easier.***
Keywords: Mern Stack, MongoDB, Express(.js), React(.js), Node(.js), NFT, Blockchain, Solana, Metaplex Protocol.

I. INTRODUCTION

Combining the initials of the four key technologies that make up the "MERN Stack"— MongoDB, Express, React, and Node—led to the creation of the term. A leading JavaScript web server, the JavaScript client-side framework React.js, the Node.js web framework Express.js, the MongoDB document database. The application layer is made up of Express and Node working together. Unlike to express.js, which is a server-side web framework, Node.js is a wellliked and efficient server-side JavaScript platform. Regardless of the model you select, MERN provides the best framework for JavaScript and JSON-based applications. A three-tier design may also be easily built using the MERN architecture. The project's NFTs BUY and Watching component: What does NFT stand for? Non-fungible token. Everything is unique and cannot be replaced by anything else, according to the meaning of the term "non-fungible". In contrast to fungible commodities like bitcoins, where one unit may be exchanged for another identical unit, non-fungible assets have distinguishing characteristics that set them apart from other assets

II. WHAT IS WORTH PICKING UP AT THE NFT SUPERMARKET?

These digital pieces of data that are both fungible and non-fungible assets may be bought, sold, and transferred; the transactions involving them are documented on a blockchain ledger. Moreover, NFTs could be given licencing rights that provide the owner access to a specific use of the asset to which they are connected. Yet, because the informal transfer of ownership lacks a sound legal basis, an NFT frequently derives a substantial percentage of its worth from its status symbol. One of the most often used blockchains for NFTs and decentralised finance is Solana (DeFi). In terms of market value, its native cryptocurrency, SOL, has risen to ninth place overall. Solana draws customers looking for productivity since it can conduct transactions more quickly and cheaply. As a result, well-known platforms are joining Solana or have already relocated there. It is anticipated that this trend will continue as additional links are established

III. LITERATURE SURVEY

This kind of review is referred to as a literature review. The most recent information on a subject is presented in a professional writing assignment known as a literature review, which includes factual information as well as theoretical and methodological contributions. Reviews of previous literature are secondary sources that don't include any brand-new or unique experimental work. Evaluations of the literature serve as the basis for studies in practically every academic subject. A concise literature review that places the work under discussion in perspective and provides the reader with insight may be included in a peer-reviewed journal article that presents recent discoveries. A unique fuzzy multiple criteria decision making (FMCDM) model is presented in [1] research to handle the evaluation problem of the B2C service e-loyalty concept. In this study [2], we examine the website's interface and content to better understand how to offer services that are appropriate for users. [3] demonstrates the growing trend of businesses conducting their e-commerce operations online in China and other international marketplaces.

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[4] Consumers today perceive the Internet as a platform for online retail that has the potential to attract and keep customers. [5] Online shopping has become more common due to the wide selection of goods and the ease of shipping. Customers are also released from the confines of physical location while doing business online, and they have access to shopping websites and search engines to learn more about products. This project is a web-based purchasing platform for an existing company. The project's objective is to provide an Android shopping app. Online shopping is the practise of customers transacting with merchants directly and in real-time through the Internet without the need of a middleman. This kind of electronic trading is particular. [7] The goal of this initiative is to provide customers of physical stores access to online buying. It enables you to use an Android phone to make purchases online from any location in the earth. The customer will be able to order products from his favourite retailer online and have them delivered to his house. [8] This article examines the main obstacles to B2C enterprises' growth using actual data from client demand. The authors carefully consider the factors that influence the development of service objectives and website popularity in order to raise the quality of service offered by a B2C organisation. the creation of a massive logistical network, the use of cutting-edge technology, the development of trust, the dedication to service, and so on. [9] In this study, the literature is reviewed in order to assess the factors affecting B2C web equity. In view of the characteristics of B2C websites and the behavioural qualities of online users, this article emphasises website security, website design, interaction, order fulfilment, and marketing communication as the critical factors affecting B2C web equity. [10] 7.3% of China's population, or 42.9% of all purchases done internationally, are made online

IV. PROPOSED SYSYTEM

Online trading of conventional goods and equipment is conceivable, but additional useful features are becoming more and more in demand. As new technologies are created and draw big audiences, a futuristic and more advanced approach to online shopping is becoming more and more in demand. "Apni Smart Dukaan" aims to fill these demands by providing customers with a more sophisticated e-commerce experience that includes cutting-edge features and capabilities above and beyond those often offered by standard e-commerce platforms.

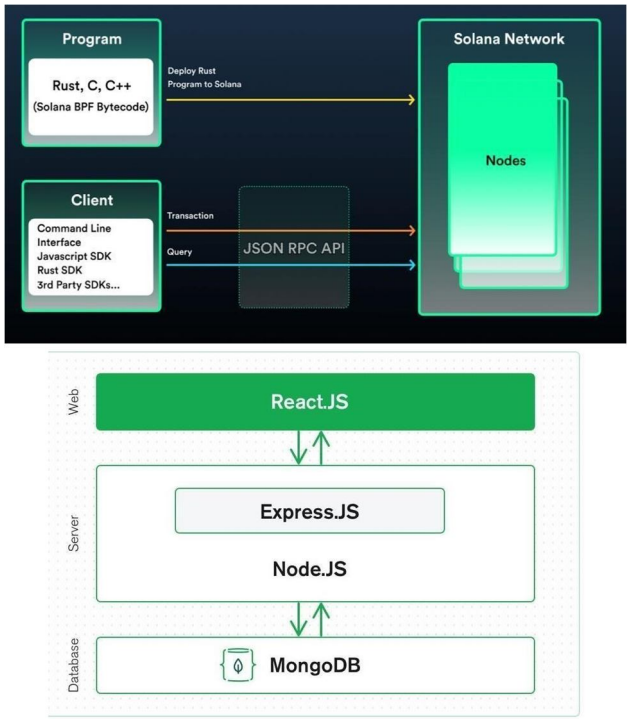


Fig IV Three TIER ARCHITECTURE

In the past, individuals frequently used cash or credit cards to purchase products. As cryptocurrencies and blockchain are utilised more often and innovatively, more individuals are opting to use them for transactions. Metamask and Phantom are the most widely used cryptocurrency wallets for trading since they are interoperable with the Ethereum and Solana Blockchains, respectively. Any business interactions involving our products will be conducted through the Solana Ecosystem.

Because to their lengthy transaction durations and high transaction fees, Ethereum, Bitcoin, and other blockchains like Solana have scalability issues. The highest number of transactions per second (TPS) that could be completed on a blockchain at the time Solana entered the market in 2017 was just 15, as opposed to thousands of TPS for credit card companies. Every time a user makes a transaction on a blockchain, they must also pay transaction fees. These costs might soar to hundreds of dollars during periods of high usage, such as when a well-liked NFT is initially made available. Solana was specifically developed to deal with these issues, and it has done so effectively.

Some well-known e-commerce platforms no longer allow the purchase of digital assets despite their rising popularity in recent years. Our approach aims to close this gap by supplying the e-commerce sector with digital assets as the demand for them increases. Customers may link their Solana Wallet to the shop and access their assets using their wallet address, which corresponds to the node where the digital asset is stored, rather than being forced to transfer money between several marketplaces in order to buy digital assets.

V. WHAT IS A DIGITAL ASSET(NFTs)?

Physical objects that may be captured in digital form and used by businesses to generate value are referred to as "digital assets." Textual materials, audio and visual recordings, motion graphics, spreadsheets, slide shows, and websites are just a few examples of how they might be presented.

VI. METHODOLOGY

A. Technology

1) Front End

a) React JS

b) HTML

c) CSS

2) Blockchain

a) Solana Blockchain

3) Back End

a) Node JS

b) MongoDB

c) Express

4) Wallet

a) All Solana supported wallets

5) Protocol

a) Metaplex

B. System Requirement

1) Hardware

a) Ram-Min 4gb

b) 64-bit processor

2) Software

a) Vscode

b) Mongodb

VII. CONCLUSION

In order to enable NFTs, we have developed an entire web application called "Apni Smart Dukan" that uses the MERN Stack architecture, includes a submission system, and is built on top of a blockchain. For the project's front end, we utilised React JS, HTML, and CSS; for the back end, we used MongoDB, Node JS, Express, Solana, Machine Learning, and Metaplex. These resources enabled us to effectively finish the work.

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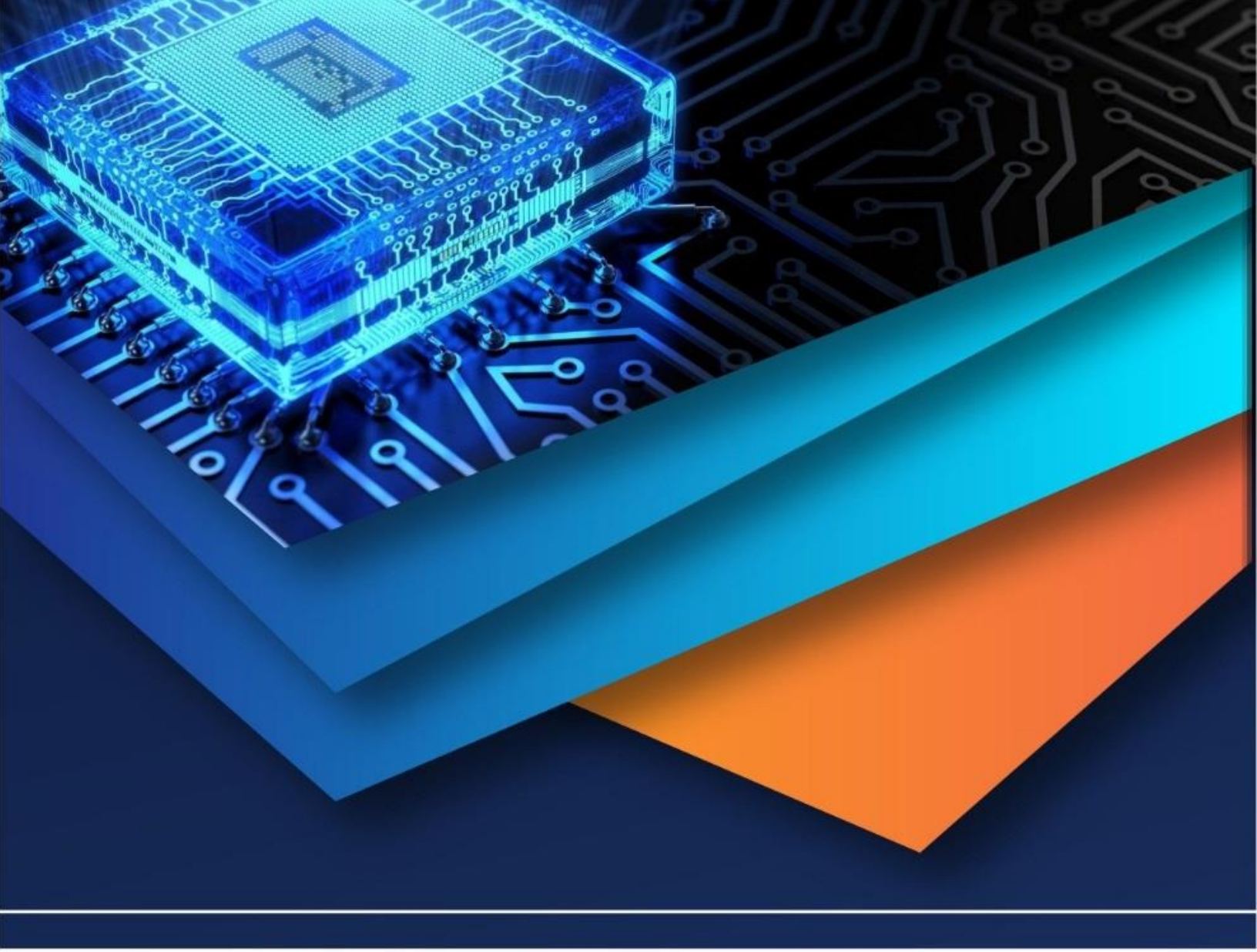
VIII. ACKNOWLEDGEMENT

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