

Tudofarm-An E-commerce Platform for Agricultural Products

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ABSTRACT—By erasing conventional time and geographic limitations, emerging technologies have reshaped the enterprise. The information revolution introduces a fresh produce marketing e-commerce application. The majority of individuals can purchase products online. E-commerce not only develops a new virtual community of buyers, sellers, and suppliers linked by the need for goods and services, but it also aids in increasing the effectiveness of agricultural products' distribution. Customers can utilize search engines to uncover thousands of similar websites by searching e-commerce websites. It not only lowers the cost of distribution but also makes it possible for agricultural products to be distributed faster, safer, more conveniently, and more effectively to a larger area. The producer-consumer model (BPCM) proposed in this study is based on block chain technology and enables farmers to sell their products directly to customers while prohibiting intermediaries from exploiting farmers through the use of smart contracts.

Index Terms— E-commerce, Marketing, Blockchain.

INTRODUCTION

The main difficulty faced by farmers today is not only the production and the yield of the agricultural products but also the environment or the place to promote and sell their products for the desired price. Nowadays many farmers were not able to continue agriculture because of the financial burdens and less profit in their sector. Our idea is mainly to make a platform where the farmers can promote their products and sell their products to their customers. Our idea is to create a web application where the producers and the consumers can connect with each other.

This web application is an open platform where anyone can promote their products to their customers. This web application will improve the agricultural sector and also the upcoming small business sector. This application uses Blockchain technology to record transactions. Blockchain technology is very safe and secure. The main motive of this idea is to develop the sector of agriculture and small business. This application will create an environment for the farmers. The application will contain all the information about the product.

Some of them are listed below:

1. Information about the producer.
2. Information about materials used for producing or manufacturing the product.
3. The quality of the product.
4. The way by which the product has been produced etc.

BLOCKCHAIN TECHNOLOGY

Here we are using the blockchain technology for recording the transactions that are happening in the application. By using block chain technology we can improve the data security and data loss.

Statement of the problem and Objectives

The statement of the problem involves in the case of the involvement of the agri products in the market system is the basic need of today society in which now a day's people are used to buy the products from the distributors from the market and hence this will bring a big loss to the farmers society by their profit and by the land production and hence they involve in the source of the cultivation and hence to overcome this solution we have a producer consumer E- Commerce based application to improve the way of being interaction between the farmers and the people to improve the overall strategy of the involvement of the people to buy the agri which may be useful for their own with a reliable price this will help them majorly in their profit and good interaction

Background Study and Technology gaps identified

The background of the project involves in the field of the improvement to be promote the agriculture farmers to get a better improvement and in the case of the involvement of the agri products and hence they provide the source of the main agri products and hence the involvement of the product based communication between the process flow of the development of the agri field the technology involved in this case of the E-commerce web based application involves in the source of block chain technology and majorly it involves the transaction process and hence this majorly involves the use case of the project to get implemented

E-COMMERCE AND BLOCKCHAIN:

A technology platform that could host and implement commercial applications, the Internet took several decades to develop from a network that was primarily utilized for communication at and between military and educational institutions (Mueller, 2002). However, it didn't take long after the World Wide Web was developed (Berners-Lee et al., 1994) for commercial websites to take off (Mukhopadhyay et al., 2008; Tian and Stewart, 2006) and e-commerce to become a widely used business model. Retail e-commerce sales reached 4.89 trillion US dollars in 2021 and were projected to reach 6.39 trillion US dollars by 2024 (Statista, 2021b), which (Hasanat et al., 2020). In contrast, all cryptocurrencies' market capitalization amounted to 566.26 billion US dollars in 2017, 128.78 billion US

dollars in 2018, 237.1 billion US dollars in 2019, and 758.06 billion US dollars in 2020 (Statista, 2021a), demonstrating a sharp decrease following the 2017 hype, as well as an immediate rebound and increase. Payments using crypto currencies only have a 2% proportion of digital payment transactions, but are rising in importance (Markham, 2019). The following sections briefly summarize the emergence of e-commerce and highlight some major research areas that have evolved. Summary of key blockchain-related developments afterwards. In terms of expectations and, in some cases, market adoption, the blockchain age has advanced faster than the e-commerce period. subject of debate This is particularly owing to the characteristics of blockchain, which can significantly affect e-commerce.

E- COMMERCE CHARACTERISTICS:

There are several reviews that have been carefully categorized and organized in e-commerce literature. Structuring Domains is one of the early e-commerce review articles by Ngai and Wat (2002). Applications (such as interorganizational systems), technical challenges (such as security, network technology, and support systems), and support and implementation are among the topics covered in this section (public policy, corporate strategy, etc.). Later e-commerce review articles have concentrated on problems like developing trust. Consumer Relations (Papadopoulos et al., 2001), Regional Focus (Vaithianathan, 2010), Online Consumer Behavior Science (Hwang, 2016; Thomas et al., 2019), Recommender Systems (SLi and Karahanna, 2015), and Reference Architectures are some examples of consumer-related topics (Aulkemeier et al., 2016). These frameworks are useful for both practitioners and help identify the most crucial success criteria Academics to assist in identifying factors that could contribute to fostering and directing the growth of electronic trade and how to create effective apps. Many academic publications explore its prehistory. profitable online business. By using information technology, Kaufman et al. (2010) demonstrate how e-commerce has transformed. Network-based enterprise value creation and sector conclusions A digital transition has occurred. The adoption of e-business to what degree and how it affects corporate performance are examined by Wu et al. (2003) created a model that takes into account company traits such a focus on top management, organizational adaptability, and customer focus. competitive environment and competitive orientation, measured and implemented using success factors, prescriptive pressure, and consumer power.

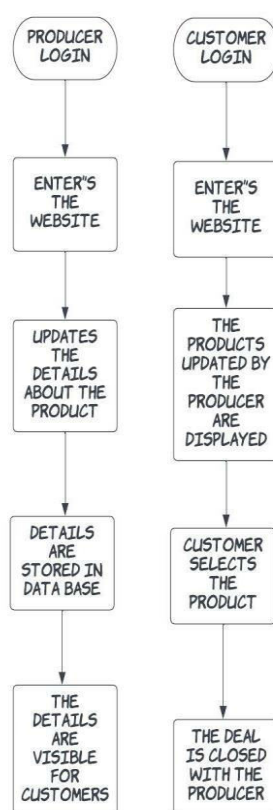
Results are adjusted for market and technological risks to reflect the actual performance impact. This model was expanded by Roberts and Toleman (2007) to incorporate regulators. Additional requirements include the environment (i.e., e-Government Services and e-Government Compliance procedure), corporate scale, and supply chain strength, which also includes supplier strength. Research is based on theoretical models like the Technology Acceptance Model (TAM), among others (perceived usefulness, perceived ease of use). Decision-maker characteristics, innovation characteristics, and environment characteristics are differentiated by the Unified Theory of Technology Acceptance and Use (UTAUT) (Performance Expectations, Effort Expectations, Social Impact, Facilitation state) (Pavlou, 2003; Shih-Tse Wang and Pei-Yu Chou, 2014; Wirtz and Gottel, 2016). (Ching and Ellis, 2004) Alternatively, add more factors that are particular to consumers, like: B. Trust, perceived risk, social impact, and pleasure

PROPOSED MODEL:

In this model it mainly improves the implement of the Tudofarm project analysis between the form of agriculture based products and it improves the .producer consumer surplus method between the direct way of producer consumer approach and as well as there is no man in the middle approach of the producer consumer model in this analytics the only thing is to provide blockchain to hold back the records of the consumer producer records by their own transaction methodologies and to provide the basic thing to provide the future better

BLOCKCHAIN TECHNOLOGY CHARACTERISTICS:

Mougayar (2016, p. 4) offers the following three definitions of blockchain. Technically, a distributed ledger that is auditable. It's work. A network of exchange for transmitting assets, value, and transactions amongst coworkers without the use of middlemen. Seen from a legal perspective Transaction validation takes the place of previously trusted parties. The unique qualities of blockchain are the emphasis of this study rather than a particular algorithm or technology, therefore comparable technologies that are usually referred to as DLT or trustless systems are also taken into consideration. DLT is an umbrella term for systems that distribute data across multiple nodes in either private or public ledgers (Crosby et al., 2016). Although supposedly trustless technologies reduce rather than completely eliminate the requirement for trust, this is accomplished by offering different cooperation incentives to individuals that encourage actions that are advantageous to the system as a whole (Bohme et al., 2015; Moser and Bohme, 2015). The reader should be aware, however, that this naming rather follows the typical usage of the term and is not a precise delimitation to other terms. The remainder of this paper uses the term "blockchain" as a synonym to encompass this set of related technologies, as is common practice in the academic literature. As we are concentrating on that in this white paper, it is less significant. Rather than focusing on a particular application or manifestation of these technologies, technology is about the well-known characteristics that are shared by the underlying collection of assets.

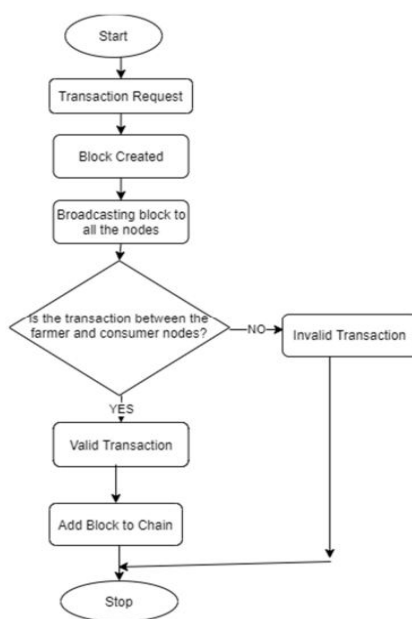


Blockchain users can maintain a shared database. Without the need for a trustworthy central controller or shared trust, any player may enter or leave the system at any time (Bohme et al., 2015). Algorithms use cryptographically connecting together separate transactions to establish the chronological sequence of time stamped documents. Hashing in cryptography to connect sets "blocks" to one another; as a result, order and integrity are created along the chain of blocks (Chaffey, As of 2007, each block carries a hash reference linking it to its predecessor). These ideas were first applied in the decentralized electronic cash system called Bitcoin, which is based on a particular type of distributed ledger technology (Nakamoto, 2008) A ledger is what blockchain is. The blockchain of Bitcoin stores a complete transaction history, including the allocation of all current BTC to a certain identity. In the years that followed, numerous alternative systems were created. Additional potential uses outside virtual asset transactions (Zhang and Lee, 2020).Blockchain systems like Ethereum, for instance, allow participants to store both generic programmes and transaction codes by expanding both Data structures and algorithms that facilitate the execution of generic code. Participants may predefine a set of operations to be carried out under specific circumstances using this code. This is particularly intriguing since these algorithms really automate contract exchange. They are known as smart contracts (Szabo, 1997) and can be significant. The Effects on All Forms of Ecommerce (Subramanian, 2018). These systems are not centralized by design, and the users actively add new data to the shared data structure. New got a new entry that wasn't in the blockchain taken over successively by other players and transferred. Participants are unable to merely add unconfirmed Entry to their own copy of the blockchain, nevertheless. This might not be the case because the participants are not necessarily in the same sequence as other network nodes and might miss certain items. Participants must reach consensus on the chain's current state through a decentralized majority voting procedure in

order to maintain the consistency of all copies of the blockchain. These blockchains make this procedure more challenging since each participant can have a limitless number of encrypted identities (such as Bitcoin). Any one of these cyphers Identity had a right to participate in the process of reaching a decision. The system state is controlled by controlling the majority of cryptographic identities since malicious actors may simply undermine the majority vote. Consequently, several blockchain systems A user who creates a new record on the blockchain is required to publish the entry. Enhanced computing capacity (proof of work) or value deployment voting commitment (Proof of Stake). There are other techniques, but they are not widely employed at this moment (Baliga, 2017). The two most significant objectives of a consensus process are (a) leader selection and (b) rate limitation. The system's initial flaw is that Primus inter pares fairly chosen to temporarily head the network Moving everyone into a new level of acceptance and sharing (Gramoli, 2020). The second is to control the quantity of new executives hired. The pace at which the state of the blockchain changes as a result. Attacks are not only slowed down by this, but they are also strengthened Fairness amongst players who might not share the same commitment to the same goal Resources.

FRAMEWORK:

Blockchain is a piece of technology that affects e-commerce in terms of technical, legal, organizational, quality, and customer concerns. It provides previously unimaginable technological possibilities, which opens up new opportunities, but at the same time, it calls for a critical assessment of current business practices, such as those that deal with sensitive customer data or the creation of communication channels along the supply chain. The handling of data, privacy and security concerns, system development, implementation, and design, as well as the potential effects of cutting-edge technologies like the Internet of Things (IoT), big data, cloud computing, artificial intelligence (AI), and machine-to-machine (M2M) communication, are all considered technological issues. Problems with data collection, storage, and analysis are connected to legal challenges, as are potential security breaches and the need to comply with laws referred to as "anti-money laundering" and "know your customer" standards (AML). Additional concerns relate to the legal compliance of blockchain-automated business operations and innovative corporate structures, including, in the most extreme example, completely decentralized autonomous organizations (DAOs). Additionally, blockchain creates new entry points to capital markets that are still technically illegal on the soil of many nations. The financing aspect of this phenomena has drawn attention from the public and led to unsustainable development. The financial element of bubbles (Zetzsche et al., 2017) is only the start. procedures that include selling the underlying virtual assets during the fundraising process Most have been advertised as being simple to use and useful. The internal e-commerce marketplace for the project. This could work emergence of several virtual asset-based e-commerce systems, both similar and different.



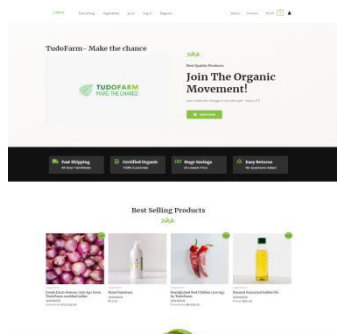
WORKING OF THE APPLICATION

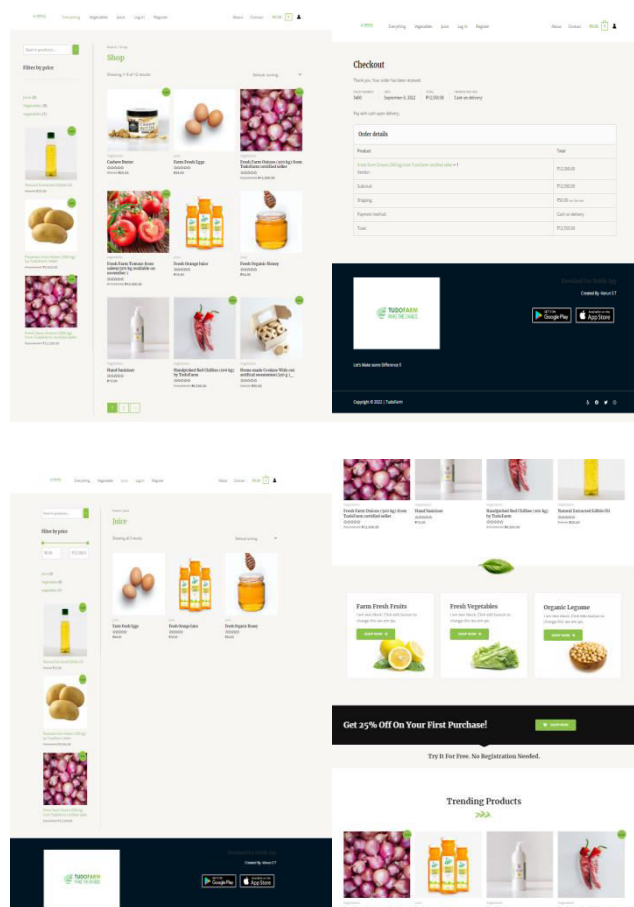
When the producer updated the product the details of the product are sent to every customer in the application, if the customer is interested in the product then the customer is allowed to chat with the producer/dealer. Once the order is confirmed the allotted commission amount is charged from both the dealer and customer side. The details about the transactions are recorded using blockchain technology which is more secure than the other available technology.

Advantages of the application

1. Simple to use.
2. Secure transaction.
3. Promoting products.
4. Overhead is low.

IMPEMENTATION OF SAMPLE PROTOTYPE:





RESULTS

By promoting the abundance of digital technologies in agriculture, our government is taking a number of steps to improve the farmer's economic situation. Security and flexibility are the two main concerns that must be addressed in the adoption of the aforementioned technologies. Farmers will benefit greatly from the proposed Blockchain-based Producer-Consumer Model since it will eliminate the current disconnect between farmers and customers. Using smart contracts, this model eliminates transactions between consumers and consumers and authenticates transactions between farmers and consumers, eliminating intermediaries—agents that operate in the place of consumers—from taking advantage of farmers.

RELATED WORK

Due to its immutability and traceability, blockchain is most frequently used in the agricultural sector for supply chain management use cases. Another useful application of Blockchain involves crop insurance claims, in which farmers and insurer come to an agreement on terms. It includes inadequate agricultural water supplies and flooding.[1] Farmers can sign up for a Blockchain-based agricultural insurance programme. If crop damage results from a natural

disaster like a flood or other extreme weather, the insurer will automatically deposit the claim amount to farmers with the help of a third party's monitoring report (meteorological stations) and smart contract validation [2]. In order to protect fish farmers' data from manipulation, this article [3] suggests a secure block chain and Internet of Things (IoT) based fish farm platform. This article presents numerous blockchain application cases in supply chain management, healthcare, agriculture, and education. This essay examines how block chains protect networks from Sybil attacks [4]. In many different nations, the ministries have launched numerous social programmes to implement blockchain technology [5] Farmers can now monitor their crops from a distance thanks to the development of precision agriculture. It also makes smart irrigation possible, in which water pumps are turned on and off in response to temperature and humidity sensors placed on the soil. These technologies also help farmers discover weeds and plant diseases in their crops. Drones are used to apply nutrients to the crops in the correct quantity, protecting them from injury.

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