A Blockchain-Based Platform Transforms E-Commerce Perspective into a Decentralized Marketplace

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Abstract

Security and effectiveness have become important part in the today's business world. Most of the world's population is diverging into e-commerce for its easy and effective services; however, security is the major concern which prevents the development of growing business. The solution is blockchain security which can enhance the credibility of the e-commerce services. This paper distinguishes about the challenges of the traditional process of e-commerce and how blockchain has conquered the traditional e-market using various blockchain-based platforms, variation of payment with crypto currency over traditional web payments. It demonstrates the business process carrying secured transactions with the decentralized marketplace. There are various e-commerce industries implementing blockchain-based platform for their improvement in online businesses. The study convinces the secure business transactions in a decentralized marketplace.

Keywords: Cryptocurrency, marketplace, e-commerce, decentralized, smart contract

1. Introduction

E-commerce is an electronic business where selling and buying transactions are performing over the internet. It has takeover various commerce industries via trading goods and services among different organizations. E-commerce uses secure websites for their web payments and financial transactions. However, cryptocurrency has brought revolution in commercial and financial transactions. Blockchain is the technology where transactions are made through decentralized currency with no central intermediaries like bank and authority. The most promising factor is the tracking system and the process of publicly available immutable transaction record. Blockchain technology is a distributed ledger for various economic and financial transactions that performs series of calculations and makes a secure way for e-commerce.

2. Blockchain For E-Commerce

Blockchain technology supports e-commerce as they required for storing highly secured data and fast transactional process which is concerned with unaltered records for web payments and order processing. Blockchain technology can change traditional e-commerce industries including online shopping markets like EBay, Amazon, etc. Blockchain provides undeniable protected and truthful services for record maintenance between buyers, seller and marketplace.
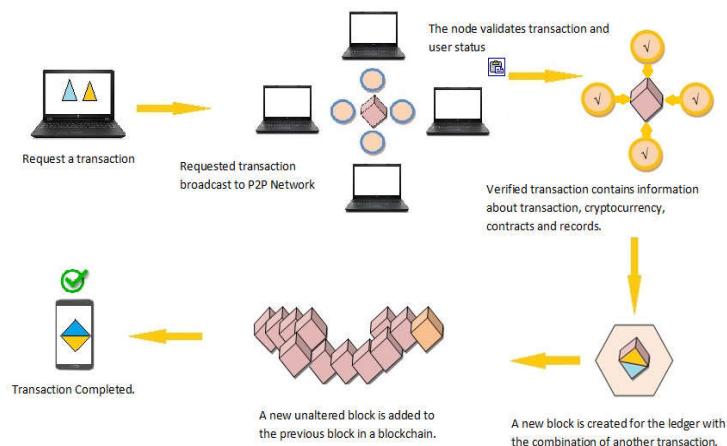
Figure 1. Implementation of Blockchain Technology

3. How Blockchain Revolutionize Traditional e-Commerce?

Blockchain technology, being a public distributed ledger, keeps the record of all concluded transactions in regularly expanding chain of blocks which bring marketing people to track their digital transactions

The major advantage of blockchain in e-commerce is to secure transactions during online purchase. Consumers can purchase online without disclosing their credit card or bank account details. Despite many technical and security challenges, blockchain cryptocurrency is heading forward for required resources for the consumers to takeover traditional e-commerce processes.

3.1. Common Differences

Table1. Traditional e-commerce Payments Vs Payment via Cryptocurrencies

	Traditional e-commerce Payments	Payment through Cryptocurrencies
1.	Payment process is slow.	Payment via crypto currency process is faster and safe as it does not store customer's payment information, which are called as "push" transactions in blockchain technology.
2.	Processing fees are generally higher.	Processing fees or the exchange crypto currency into USD/CAD/GBP/EUR fee is nominal.
3.	Disagreements resolution system can leave a negative impact for future customers.	Cryptocurrency payments gained customer's trust to build strong affinity in e-commerce marketplace.

3.2. Architecture of Blockchain Business Process

Blockchain symbolizes chain of secured blocks carrying digital transactions. It holds absolute information of user addresses from first block till the last completed block. Each block carries hash pointer linked to the hash pointer of the previous block in a chain, validated transactional data and timestamp. This block then added to the blockchain after its

completion. Then a new block is created with a copy of complete blockchain and relayed sequentially to the blockchain as distributed database. The recorded transactional data within the block is immutable as it needs massive computing power to capture the whole network of linked devices. Blockchain will become more robust with the increase in connected devices on the network.

Blockchain based e-commerce application provides decentralization process where no middle person involved between consumers and merchants. All transactions performed by the customers are stored in blockchain, encrypted and unaltered. Blockchain based e-commerce platform has the algorithm which makes an open database that contains evaluated quality products, review of customers and price list. These parameters evaluates by the number of sales of the product. Following are the processes that makes e-commerce a smart blockchain based platform:

1. Smart contracts facilitate blockchain that makes transactions faster and secure with the decentralized marketplace.
2. There is a decentralized marketplace for selling and purchase through cryptocurrency.
3. The goods inventory can be registered without any fees.
4. Transactions would not have any charges.
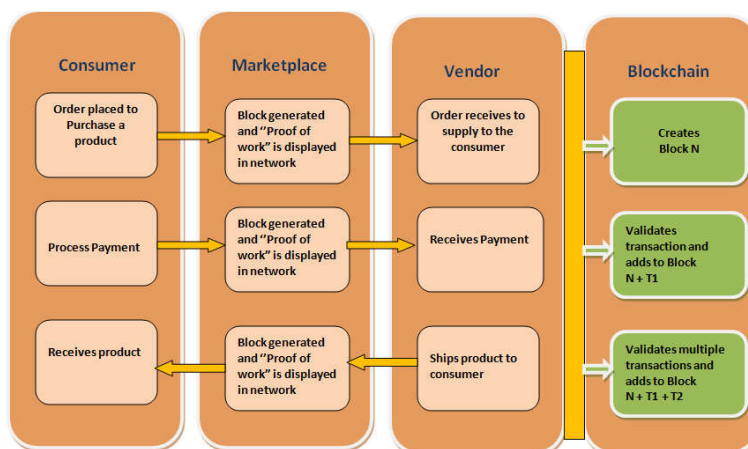5. There will be no third-party interference for the entire process.

Figure 2: Blockchain Reduces Transaction Complexity, Cost and Duration of Process

3.3. Challenges in Traditional E-commerce and impact of Blockchain on It

Some of the challenges face by traditional e-commerce is Reliability, Frauds and Transaction Rate.

1. Reliability: Buyers can rely on seller only through the third party who assures them for fair transaction based on some compensation to uphold the ledger.

2. Frauds: Industries encounter many problems with the vendors deals with fake products which affect their brand quality.

3. Transaction Rate: E-commerce face huge expenses for shipping, ordering and delivering products through different suppliers which make the supply chain process not only expensive but also takes more time to process the transaction. Also, the transactions get delayed sometimes.

However, blockchain technology can solve above problems through making transactions more faster and inexpensive.
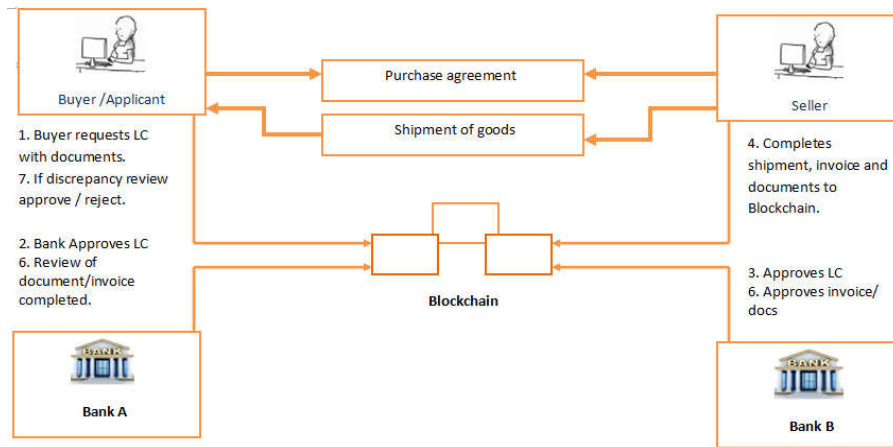

Figure 3: Easy and Faster Transactions

3.3.1. Authenticity: Blockchain based platforms are worldwide and offers customer to make financial transaction from their bank account to directly to the merchant without any intermediary like Credit Card or PayPal who charges extra money to the customer. Moreover, customers' doing online marketing does not need to disclose their financial credentials. This kind of transactions is user friendly and having nominal fees.

3.3.2. Correctness: Blockchain technology possesses with robust tracking system that holds transparency between customers, manufacturer and retailer for the source of the product and its shipment. This blockchain based tracking system has a huge benefit for consumers for food products as it can check for safety measures of the added ingredients.

3.3.3. Online payments and E-commerce: Digital currency can enhance e-commerce market for keeping transaction record for customer's refund process. 'Expedia' and 'Shopify' are the initials companies to accept cryptocurrency. Blockchain technology is designed to diminish fraud in banking sectors so that it can be used on e-commerce too. Also, it can be a great help for marketing and advertising too to achieve their goals.

3.3.4. Proof of Ownership: Blockchain technology can help the companies to protect their product designs and patterns so that their brand value will not be counterfeited. This way, companies can have the proof of ownership of their manufactured brand product. Companies can register as a product manufacturer and track their sales and to diminish copyright claims.

3.3.5. Cybersecurity: Blockchain technology provides high security for the confidential data to prevent from hackers and viruses and it becomes a necessity for the global e-commerce. Cybersecurity equipped with three essential features that can enhance security for business data. Those features are trust, security and accessibility. Customer needs confidentiality as their financial information is being disclosed on the website and it should be encrypted. The employee of the company also needs to be trained with the security measures. Company or e-commerce website needs to be encrypted to gain the customer's trust, it does not matter where the data is stored because a single point of failure can cause the entire system down. That is where the blockchain technology can save for being a

decentralized ledger and protocol for the e-commerce companies for Cybersecurity. In terms of accessibility, Blockchain technology ensures e-commerce business to allow authorized users to access the data with highly secured transactions. The security protocol uses smart contracts to make transactions secure and transparent to those with access rights.

3.3.6. Operation Management: Earlier, many companies were struggling with online services, however, they transformed their firm blockchain technology with encrypted data where they could save their work without any fear of being theft.

4. Blockchain Based Platforms Used For E-Commerce

The blockchain technology is the secured platform for e-commerce transaction between different parties. It keeps the record of all digital transactions in a distributed ledger without being disclosed or verified by any intermediary party.

Blockchain technology revolutionizes many companies in different sectors for evolving different new tools for a secure and confidential database. Its safest digital transactions have modernized the function of various organization including e-commerce. Below, we have discussed some of the e-commerce platform that is based on blockchain technology and implemented worldwide.

4.1. Hyperledger

Hyperledger provides distributed ledger framework to various industrial sectors like supply chain, finance markets, banking institution and manufacturing companies.

4.2. Multichain

Multichain is one of most safest and an approved private blockchain-based platform that offers services to the different e-commerce and financial industries.

4.3. Quorum

The high processing speed Quorum platform works like ethereum technology and has developed by J.P. Morgan. It is the web of linked shared databases having unaltered transaction record. The key feature of Quorum platform is that it can be personalized as per the industrial requirement.

4.4. Elinext (Ethereum app)

'Elineum' is a best example for Ethereum based Decentralized e-commerce based application platform, also known as DApps. Customer can select and buy products with their Android application from the retail online store and make payments in Ether (ETH). Additionally, the administrator of the application has the privilege to modify stores as per the available quantity of the products. This blockchain based platforms has developed on smart contract and omitted the extra transaction fees and tedious payment process.

4.5. Smart contract

Smart Contract is a digital agreement between two parties which are coupled with blockchain technology. In blockchain based E-commerce platform, Smart contract possess the details of product, suppliers and customers which then automatically executed as per the digital contract and there is no way for data deception by the intermediary or any middle brokers. This platform also provides services based on the contract between financial institutions.

4.6. Eligma

'Eligma' is one of the blockchain based application for e-commerce that provides data security and smart contracts. Customers can buy and sell their household products efficiently as per their price given through this platform.

4.7. Coupit

'Coupit' is a decentralized platform based on blockchain security where vendors authenticity has been verified before they connect with the consumers with the previous purchase history. This platform offers vendors to directly communicate with the customers through advertisement without costing any extra charges. This platform also offers retailers a marketplace to get discounts, information of past transactions and prevent from false reviews.

4.8. Revain

'Revain' is a blockchain based platform offers quality review of consumers with reward through RVN cryptocurrency and protect genuine reviews from tampering.

5. Application of Blockchain in Various E-Commerce Industries

5.1. Fund Transfers

Blockchain technology has evolved cryptocurrency for secure, well verified monetary transactions and direct funds transfers without involving any intermediary like banks and also with nominal processing cost.

For instance, 'ChanceChain' is a blockchain based smart contract platform which has its own digital currency where people can transfer fund or make web payments without any hindrance.

5.2. Web Payment Transactions

Though we have many online services available those works with third-party intermediary between two parties for verification process that creates high transaction costs, blockchain technology eliminates intermediary process making e-payments more secure, reliable and faster. Moreover, the smart contract build a mutual reliance in e-commerce industries, which completely depends on the confidentiality of customer's fund. Since the blockchain's distributed ledger keep the same data on each block, it becomes difficult to breach the network for the hackers.

5.3. Decentralized digital Market

Blockchain based e-commerce platform offers secure structure for users and businesses for direct communication with no central organization or government to manage. The platform developers also do not have privilege to make any modification without agreement. 'BitBoost' is the uprising online marketplace platform that supports blockchain technology where buyers and sellers can interact directly online for their services. 'Shopin' is the blockchain based application where retailers can find existing shoppers with their approved shopping summary and attract them with discounts and special offers keeping their profile confidential.

5.4. Secured Supply Chain

Presently e-commerce applications have made businesses easy for merchants and consumers, however, the shipping process is still complicated and lengthier. Shipping process demands more documentation, settlements and handovers which makes the process expensive, tedious and insecure before it reaches to the desired location.

Nevertheless, blockchain based platforms for supply chain offers secure, consistent and apparent way to parcel orders. Every member involved in this processes have the same ledger that states the shipping progress of the product from source to destination resulting error-free and less product movement charges. Moreover, the suppliers can track the real-time dispatch of the product and customers can have detailed information of the purchased product. 'VoltMarkets' is an instance of blockchain based platforms which agrees for fast delivery using smart contract consensus at low cost without involvement of dealers. Customers can reward with their rating for timely delivery. 'ShipChain' is the biggest blockchain-based contract platform which covers almost complete supply chain product delivery at reduced cost without third-party involvement.

5.5. Resourceful Business Management

Emerging blockchain technology in business management has an important role on accounts and inventory management with a reduced budget and error-free paperwork. Blockchain technology can also accomplish the task of payroll and incentives based on smart contract that programmed on conditions and goals.

5.6. Efficient Retail Management

The blockchain builds proficient, safe and error-free system for retailers in e-commerce. Most of the retail companies have approved this technology for user data protection. The blockchain platform is used to do the job of accounting, budgeting, inventory control so on.

The blockchain also works on gift and loyalty schemes based on smart contract to make the customer transactions more cheaper by eliminating intermediary to fulfill the process. For instance, 'GyftBlock', a blockchain platform provides a e-gift card which is strongly secured to trade on the blockchain's public ledger.

6. Blockchain and the Future E-Commerce

Blockchain Technology has just touched the surface of the business world, however, it is progressing gradually in the e-commerce world to upgrade its existing system to crypto-world. The decentralized marketplace will capture the traditional market keeping records in the distributed ledger resulting reduction in transaction charges. The consumer will confident to keep their financial and personal information with a merchant or suppliers in blockchain network that will create easy transaction using blockchain based platforms.

Undoubtedly, the technology will be a crucial part of business or e-commerce in upcoming time which will lead the market world.

7. Conclusion

Blockchain based applications are embracing most of the e-commerce industries that revolutionize crypto currency for financial transactions, contracts and business development processes possessing their own digital signature. The smart contracts are programmed, distinct, unaltered, secured and available as distributed ledger eliminating all intermediaries that makes transactions more cheaper. Though it has many challenges and might take significant time for consumers to understand its process, however, the trustworthy platforms can modernize e-business and financial institutions through experience.

References

[1] Dmytro Spilka, "How Blockchain is Beginning To Revolutionize eCommerce", BUSINESS 2 COMMUNITY, (2018) October 2.

[2] Rick Martin, "How Blockchain is Impacting Ecommerce", Ignite, (2018) November 29.

[3] Bob Mason, "How Can Blockchain Change e-Commerce", FXEMPIRE.

[4] Anmol Gupta, "How can blockchain make ecommerce better?", Quora, (2018) February 8.

[5] Manish Dudharejia, "4 Ways to Make Your E-Commerce Site More Secure", TotalRetail, (2018) May 30.

[6] "SECURE CRYPTOCURRENCY ECOMMERCE PROCESSING", Tristan, Canada.

[7] "10 Ways Blockchain Technology Will Change E-commerce Business", ProBytes Software, India, (2018) April 26.

[8] Jia Wortz, "Cybersecurity: How Blockchain Is Helping E-Commerce Businesses Protect Their Data", Forbes, (2017) October 31.

[9] "10 Potential Blockchain Platforms to Watch Out in 2018", new gen apps, India, (2018) May 3.

[10] "Ethereum app for e-commerce", eliNext, USA, (2019).

[11] Gagan Mehra, "Blockchain Vendors with Solutions for Ecommerce", PracticalEcommerce, (2018) September 27.

[12] "The Potential Impact of Blockchain Technology on Ecommerce", Sales & Orders, (2018) February 20.

[13] dApp Builder team, " How Blockchain will Improve E-Commerce", DAPPS BUILDER, (2018) July 27.

[14] "8 Blockchain Applications That Could Help Your Small Business", Upwork, San Francisco, CA, (2018).

[15] Ved Prakash, " 4 Ways Blockchains Will Redefine eCommerce", GlobalSign, New Hampshire, America, (2018) August 7.