

## **IMPACT OF CRYPTOCURRENCIES ON ECONOMIC ACTIVITY IN THE E-COMMERCE SECTOR**

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### **Introduction**

A cryptocurrency is a digital or virtual currency that is secured by cryptography, which makes it nearly impossible to counterfeit or double-spend. Many cryptocurrencies are decentralized networks based on blockchain technology—a distributed ledger enforced by a disparate network of computers. A defining feature of cryptocurrencies is that they are generally not issued by any central authority, rendering them theoretically immune to government interference or manipulation. Cryptocurrencies are systems that allow for secure payments online which are denominated in terms of virtual "tokens," which are represented by ledger entries internal to the system. "Crypto" refers to the various encryption algorithms and cryptographic techniques that safeguard these entries, such as elliptical curve encryption, public-private key pairs, and hashing functions.

Blockchain, sometimes referred to as Distributed Ledger Technology (DLT), makes the history of any digital asset unalterable and transparent through the use of decentralization and cryptographic hashing. A simple analogy for understanding blockchain technology is a Google Doc. When we create a document and share it with a group of people, the document is distributed instead of copied or transferred. This creates a decentralized distribution chain that gives everyone access to the document at the same time. No one is locked out awaiting changes from another party, while all modifications to the doc are being recorded in real-time, making changes completely transparent. Of course, blockchain is more complicated than a Google Doc, A BLOCKCHAIN is a growing list of records, called blocks, that are linked together using cryptography. Each block contains a cryptographic hash of the previous block, a timestamp, and transaction data (generally represented as a Merkle tree). The timestamp proves that the transaction data existed when the block was published in order to get into its hash. As blocks each contain information about the block previous to it, they form a chain, with each additional block reinforcing the ones before it. Therefore, blockchains are resistant to modification of their data

because once recorded, the data in any given block cannot be altered retroactively without altering all subsequent blocks.

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**E-commerce (electronic commerce)** is the activity of electronically buying or selling products on online services or over the Internet. E-commerce draws on technologies such as mobile commerce, electronic funds transfer, supply chain management, Internet marketing, online transaction processing, electronic data interchange (EDI), inventory management systems, and automated data collection systems. E-commerce is in turn driven by the technological advances of the semiconductor industry and is the largest sector of the electronics industry. E-commerce has transformed the way business is done in India. The Indian E-commerce market is expected to grow to US\$ 200 billion by 2026 from US\$ 38.5 billion as of 2017. Much of the growth for the industry has been triggered by an increase in internet and smart phone penetration. As of September 2020, the number of internet connections in India significantly increased to 776.45 million, driven by the 'Digital India' programme. Out of the total internet connections, ~61% of connections were in urban areas, of which 97% of connections were wireless. Advantages and Disadvantages of Electronic Commerce-

**1. E-commerce offers consumers the following advantages:**

- **Convenience.** E-commerce can occur 24 hours a day, seven days a week.
- **Increased selection.** Many stores offer a wider array of products online than they carry in their brick-and-mortar counterparts. And many stores that solely exist online may offer consumers exclusive inventory that is unavailable elsewhere.

**2. E-commerce carries the following disadvantages:**

- **Limited customer service.** If you are shopping online for a computer, you cannot simply ask an employee to demonstrate a particular model's features in person. And although some websites let you chat online with a staff member, this is not a typical practice.
- **Lack of instant gratification.** When you buy an item online, you must wait for it to be shipped to your home or office. However, retailers like Amazon make the waiting game a little bit less painful by offering same-day delivery as a premium option for select

products.

- **Inability to touch products.** Online images do not necessarily convey the whole story about an item, and so e-commerce purchases can be unsatisfying when the products received do not match consumer expectations. Case in point: an item of clothing may be made from shoddier fabric than its online image indicates.

### **Types of cryptocurrency**

1. **Payment Cryptocurrencies-** Payment cryptocurrencies can be thought of as digital monies operated by a distributed network of computers running a shared blockchain software. Some focus on trying to compete with fiat money, while others focus on payments for a specific use case or industry.
2. **Infrastructure Cryptocurrencies-** Infrastructure cryptocurrencies are typically used to pay the computers responsible for running programs on a shared blockchain software network.
3. **Financial Cryptocurrencies-** Financial cryptocurrencies may help users manage or exchange other crypto assets.
4. **Service Cryptocurrencies-** Service cryptocurrencies might offer tools for managing personal or enterprise data on the blockchain. Their commonality lies in helping blockchain-based financial products access and vet external data sources.
5. **Media & Entertainment Cryptocurrencies-** Much like the name suggests, media and entertainment cryptocurrencies seek to reward users for content, games, gambling or social media.

Cryptocurrencies are digital currencies that use blockchain technology to record and secure every transaction. A cryptocurrency (for example, Bitcoin) can be used as a digital form of cash to pay for everything from everyday items to larger purchases like cars and homes. It can be bought using one of several digital wallets or trading platforms, then digitally transferred upon purchase of an item, with the blockchain recording the transaction and the new owner. The appeal of cryptocurrencies is that everything is recorded in a public ledger and secured using cryptography, making an irrefutable, time stamped and secure record of every payment.

### **Background**

Cryptographer David Chaum first proposed a blockchain-like protocol in his 1982 dissertation "Computer Systems Established, Maintained, and Trusted by Mutually Suspicious Groups."<sup>[9]</sup> Further work on a cryptographically secured chain of blocks was described in 1991 by Stuart Haber and W. Scott Stornetta. They wanted to implement a system wherein document timestamps could not be tampered with. In 1992, Haber, Stornetta, and Dave Bayer incorporated Merkle trees to the design, which improved its efficiency by allowing several document certificates to be collected into one block. The first blockchain was conceptualized by a person (or group of people) known as Satoshi Nakamoto in 2008. Nakamoto improved the design in an important way using a Hashcash-like method to timestamp blocks without requiring them to be signed by a trusted party and introducing a difficulty parameter to stabilize the rate with which blocks are added to the chain. The design was implemented the following year by Nakamoto as a core component of the cryptocurrency bitcoin, where it serves as the public ledger for all transactions on the network.

The first ecommerce transaction was made in 1994. A guy named Phil Brandenberger used his Mastercard to buy Sting's Ten Summoners' Tales via the internet for \$12.48. This particular transaction made history and signaled to the world that the "internet is open" for ecommerce transactions. Why? Because it was the **first time** that encryption technology was used to enable an internet purchase.

Needless to say, ecommerce has grown by leaps and bounds ever since. The rise of ecommerce giants like Amazon and Alibaba in the mid -1990s changed the face of the retail industry. They largely capitalized on the global internet penetration and digitalization of the financial system which contributed to the decline in sales for many brick-and-mortar businesses.

## **Discussion**

Some of the most cryptocurrency friendly countries are:

1. **Germany-** The German government considers cryptocurrency to be 'private money'. They are not subjected to VAT during transactions and are exempted from the long-term capital gains tax. So if an individual is selling their share of Bitcoins within one year, capital gains tax will only be applied if the value is more than 600 euros. But this rule only applies to resident investors. Businesses are still subjected to corporate income tax when dealing with cryptocurrency.
2. **Switzerland-** Zug is a city in Switzerland that is also known as the "Crypto Valley". The city is a bustling center of innovative blockchain firms, businesses, shops, entrepreneurs, etc. Not just that, this crypto valley is also a tax-free zone for crypto investors. Back in

2016, Zug became the first country in the world to accept Bitcoin payments.

3. **Cyprus-** Cyprus doesn't have set regulations for cryptocurrency yet, but this Middle-Eastern Island country encourages many cryptocurrency and blockchain startups. Right from casinos to ICOs, Bitcoins and other cryptocurrencies have made their place. Not just corporations, people in Cyprus also use Bitcoins in their day-to-day life.
4. **Malta-** Malta is also known as "Blockchain Island". The Maltese government fully supports cryptocurrencies, despite the local banks not being onboard with the idea. Nevertheless, Malta has a set framework for companies and startups that work with blockchain. The country's Prime Minister called cryptocurrency "the inevitable future of money", and this immense support is the reason Binance has established its headquarters in Malta.
5. **Singapore-** Singapore is also an investment haven. There is no capital gains tax in the country, so cryptocurrency is considered an intangible property with no tax. This rule applies to individuals only and businesses that are involved in cryptocurrency trading will subject their profits to normal income tax rules. Singapore is already a favorable country for independent businesses and with these supportive cryptocurrency laws, it is only inviting more organizations and individual crypto investors.

With respect to India, in the last week of March 2021, the government made it mandatory for companies to disclose investments made in cryptocurrencies. The move was welcomed by the crypto sector operating in the country. Experts said this move would open the door for all Indian companies to have Crypto on their balance sheets. "It will bring in a lot of transparency and will act as a comfort for Indian companies which are dealing in crypto-assets and were previously confused on how to put it in their books," said Sumit Gupta, CEO & Co-founder, CoinDCX. Slowly but steadily sentiments in favour of cryptocurrency are building in the country. In what form cryptocurrency would be acceptable to Indian lawmakers and regulators remains to be seen. However, the good thing for crypto lovers in the country is that discussions on this topic are not dead. Rather, they are getting louder even as cryptocurrency is not fully backed by the law. In the Parliament also, several members have been recently raising the issue of cryptocurrency/Bitcoin. In the month of March alone, at least five questions related to cryptocurrency were raised in Parliament.

Although relatively immature, cryptocurrency is making huge shakes in the retail sector, and certainly looks like it's here to stay. Some of the largest multinational enterprises have already dipped into this new digital playing field and many others are following suit. Just last week, Tesla announced that it had bought \$1.5 billion worth of Bitcoin to hold on its balance sheet, and is

planning to allow its customers to use this coin to pay for cars. But it doesn't end there. In the same week, Mastercard disclosed its plans to let merchants accept some forms of cryptocurrencies through its network later on this year, which will convert traditional money to digital currency before entering the companies' systems. Other leading enterprises making the move to embrace cryptocurrency include Square, which already gives users of its Cash App access to buy Bitcoin, and Fuse.io, which recently partnered with Monerium to create a platform for entrepreneurs to turn "communities into economies" via a blockchain.

Both centred around tech, it would be fair to assume that cryptocurrency and eCommerce have the potential to complement each other quite nicely – and, in a few cases, they already are. Cryptocurrencies, particularly Bitcoin, are already infiltrating the eCommerce industry, offering an innovative, viable, and streamlined digital solution for many existing blockers. With the ability to appease consumer demand for immediacy and security, while expanding market share for retailers, cryptocurrencies could prove extremely beneficial for the E-Commerce industry if adopted efficiently. More and more companies have grown to understand these benefits, leading to a surge in consumer attention, and it may not be long before we start to see the commercial use of cryptocurrency as a standard.

### **Potential Challenges**

- 1. Complexity-** Perhaps the most challenging obstacle in terms of large-scale adoption of the various cryptocurrency options, is that it can be a difficult subject to comprehend. The very idea of a **decentralized financial system that is stored via blockchain** can be challenging, especially if you're not tech-savvy. Due to the fact that it seems occasionally incomprehensible, people are proving to be very wary of taking advantage of the benefits that it can offer, and that appears to be the last hurdle that digital currency advocates will need to tackle if they want to see wider use.
- 2. Market Fluctuations-** There are various ways that you can use cryptocurrencies, but the majority of people using them at the moment are simply using them as an investment. While the more eager users are using their digital currency to buy tickets to sporting events, gamble online, or **even buy a house with bitcoin**, most are simply waiting for the dramatic market fluctuations to work in their favor. Treating your bitcoins as you would any other commodity may be the way to initiate a more widespread understanding and trust in the new currencies.
- 3. Lack of Security-** As with every emerging technology, there are those that use naivety and inexperience to scam, cheat and steal your hard-earned money. This has certainly proven to be the case with digital currencies, so it's important to be aware of the safety

risks. Treating your bitcoins as real money will get you in the right frame of mind, as you simply have to follow standard security protocol as you would with hard currency. For those using cryptocurrency to buy, sell or gamble online, simply be as careful as you would with any investment. For online casinos, look out for the old tricks updated to the digital age, and don't trust companies **that offer unrealistic bonuses, odds, and offers.** With a little basic security, you can minimize your chances of making a loss that can never be returned.

4. **Secrecy:** Having an unregulated currency that is not bound by customs adjustments and fluctuating political changes is positive and negative. **Cryptocurrency is completely anonymous,** which is great for those that value their online privacy and are wary of handing over too much of their digital data. While the additional layer of security that anonymity provides is an excellent benefit, it has also led to the inevitable adoption of the technology by the criminal fraternity. The black market and the dark web are big users of cryptocurrency, and criminals obviously value their anonymity as much as they value the ability to send vast sums of money anywhere in the world with a few taps of their phones. For more law-abiding citizens, the benefits of anonymity are many, but perhaps the most enticing is the fact that there is no chance of identity theft, and that's of major interest to anyone looking for more secure ways to remain online safely.

## **Conclusion**

Cryptocurrency is an impressive technical achievement, but it remains a monetary experiment. Even if cryptocurrencies survive, they may not fully displace fiat currencies. As we have tried to show in this article, they provide an interesting new perspective from which to view economic questions surrounding currency governance, the characteristics of money, the political economy of financial intermediaries, and the nature of currency competition.

Even as there is no complete legal backing for cryptocurrencies, including Bitcoin, in India, they are gaining popularity in the country. Through a circular in 2018, the RBI had advised all the entities regulated by it not to deal with virtual currencies or provide services for facilitating any person or entity in dealing with settling them. However, the Supreme Court set aside the RBI circular on March 4, 2020. Since then, cryptocurrency has been one of the most talked-about investment options. But there are fears that the government may legally ban the virtual currencies being traded right now. Officially, the government does not consider cryptocurrencies as legal tender.

Replying to a query in the Rajya Sabha last week, Finance Minister Nirmala Sitharaman said, "The Government does not consider crypto-currencies legal tender or coin and will take all

measures to eliminate the use of these crypto-assets in financing illegitimate activities or as part of the payment system.”

If this sick link between cryptocurrency and crime goes on and sanctioning bodies don't get a grip on it fast, the market valuation of cryptocurrencies will continue to plummet.

In recent months, the market has already experienced an astonishing 75% decline. There are several ways to combat this downward spiral. The first is to tap into criminal error. Believe it or not, bitcoin isn't as anonymous as you may think, as it uses a blockchain system that serves as a virtual record of all transactions on the network. Remember, the Blockchain is publicly accessible, which allows anyone with a bit of computer savvy to trace the digital footprints of anonymous traders. It's for this very reason that bitcoin is often used on the Darknet with the anonymising software, The Onion Router (Tor) for extra security and anonymity. The open, transparent nature of crypto transactions means that it's very hard for criminals to convert it into fiat currency and get away with it.

Thinking proactively, it would be wise for businesses to increase communications between various governments to detect certain patterns and produce more annual reporting standards to show their legitimate use of cryptocurrency. The final way of minimising criminal cryptoactivity is to introduce tighter regulations. Luckily, this is a hot topic at the moment, with a lot of continual alterations happening around the world, which also influence the effect of Blockchain on legal and compliance matters.

It's therefore vital that you stay in the loop about the latest regulatory changes and move with the times to make sure you utilise this richly rewarding technology. If you don't, you could be left behind and end up paying a hefty fine for being non-compliant. Cryptocurrency and crime activities are still a burden on the success of Blockchain, but something is being done, and we can expect improvements.

## **References**

★ Cryptocurrency in India: The past, present and uncertain future, *The Economic Times*, March 9, 2021.

<https://economictimes.indiatimes.com/tech/trendspotting/cryptocurrency-in-india-the-past-present-and-uncertain-future/articleshow/81410792.cms>

★ Brooks, J. Future of cryptocurrency in the ecommerce industry, *Global Banking and Finance Review*.



<https://www.globalbankingandfinance.com/the-future-of-cryptocurrency-in-the-commerce-industry/>

★ Komarraju, A. The most cryptocurrency friendly countries in the world, *Analytics Insight*, June 21, 2021.

<https://www.analyticsinsight.net/the-most-cryptocurrency-friendly-countries-in-the-world/>

★ History and evolution of blockchain technology from bitcoin

<http://myhsts.org/tutorial-history-and-evolution-of-blockchain-technology-from-bitcoin.php>

★ Gupta, V. A brief history of blockchain, *Harvard Business Review*, February 28, 2017.

<https://hbr.org/2017/02/a-brief-history-of-blockchain>

★ Schebesta, F. Why you should accept cryptocurrency in your ecommerce store, *Shift 4Shop*, 2018.

<https://blog.shift4shop.com/why-you-should-accept-cryptocurrency-in-your-ecommerce-store>

★ What is blockchain security, *IBM*.

<https://www.ibm.com/in-en/topics/blockchain-security>

★ Bloomenthal, A. Electronic Commerce, *Investopedia*, November 24, 2020.

<https://www.investopedia.com/terms/e/ecommerce.asp>

★ Sarma, R. Major developments in the indian commerce sector, *Silicon India*.

<https://startup.siliconindia.com/news/major-developments-in-the-indian-ecommerce-sector-nwid-20931.html>

★ Haar, R. The 10 most popular cryptocurrencies and what you should know about each before you invest, *Next Advisor*, TIME, July 15, 2021.

<https://time.com/nextadvisor/investing/cryptocurrency/types-of-cryptocurrency/>