# The Online Marketplace: The New Frontier of Drug Dealing

## An Exploratory Analysis of Online Drug Markets

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**Abstract**

The world wide web hosts millions of transactions everyday, but many are illegal transactions of illicit goods. In this paper, we analyzed how drug traffickers and users employ the internet as a mechanism of trade. From social media apps to bitcoin wallet transactions there are endless ways in which parties find a way to make transactions. The paper explores the myriad pathways that agents use to make illicit transitions and examine how exactly these online marketplaces operate. We determine that this is an important field of study as evidence suggests that future illicit online transactions will not only continue but escalate in their prominence.

**Introduction**

Drugs are in demand. Drug use has been steadily increasing for the most popular consumed drugs including, but not limited to, cannabis, cocaine, opiates, and various types of amphetamines. Cannabis use has increased 23 percent from 2010 - 2020[1] showing how one of the most commonly consumed drugs has been dominating the world's drug market. However, the way people traffic these drugs has been rapidly changing. No longer are users passing crumpled bills in exchange for product, but rather trading Venmo account information and bitcoin wallet details. For a drug trafficker, the myriad number of online marketplaces represents an oasis of anonymity while also offering opportunities for extensive outreach. The online marketplace is an attractive platform for drug traffickers as it allows for an easy way to circumvent oversight. The online drug trade may only represent a small sector of the world's drug trade ecosystem, but that is expected to change in the coming years. This paper is split up into five main sections: Section one covers the layers of the internet and their role, section two delves into cryptocurrency and its impact on the online drug transactions, section three examines the types and the most popular of online drug marketplaces, section four analyzes how the transactions occur within these online marketplaces, and section five discusses the methods authorities use to combat illicit transactions.

[1] "World Drug Report 2022." *United Nations : Office on Drugs and Crime* https://www.unodc.org/unodc/en/data-and-analysis/world-drug-report-2022.html.

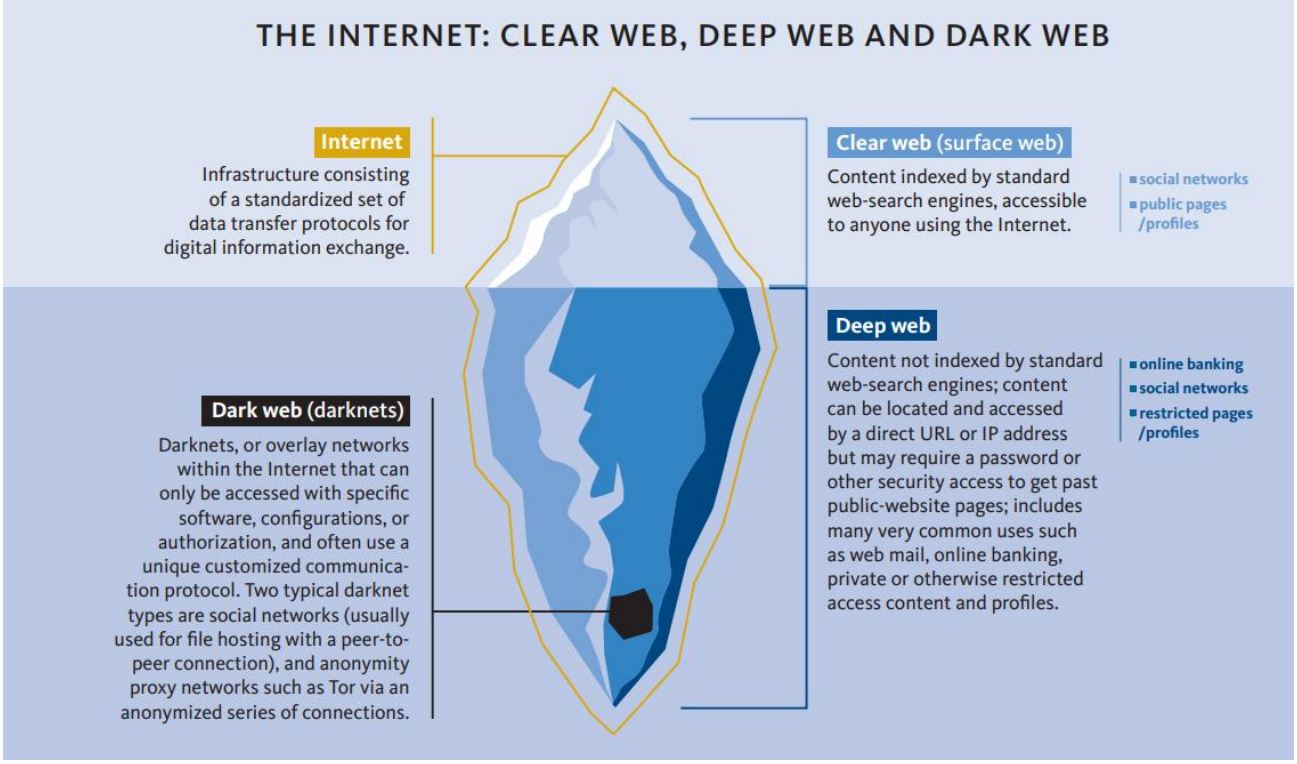
## Internet and More

The darknet market ecosystem is plagued by a high turnover rate and extreme volatility. The past ten years, even with government interventions, darknet markets have grown even faster than when they originally gained traction. According to the United Nations 2022 World Drug report, over 100 darknet market platforms have emerged over the past decade, but only have an average lifespan of 8 months. There are 19 major darknet markets that sold drugs between 2011 and 2020, and roughly 90 percent of total darknet transactions were drug-related. There has been a constant increase in the volume of drug-related transactions in the darknet market ecosystem, with the volume of modern day darknet drug trafficking being four times the size of the early darknet's volume.[2] The countries that use the darknet the most, in order, are: the United States (29% of all drug transactions), United Kingdom (21%), and Germany (13%). The most popular drugs involved were cannabis, stimulants, ecstasy, and cocaine, per the United Nations Office on Drugs and Crime. These darknet markets peaked in 2020 when the top 11 major global darknet markets averaged roughly $1.4 million in daily sales[3].

There are many avenues for a drug trafficker to reach a consumer base on the internet. In the "Clear Web", social media sites offer easy ways

[2] *United Nations Office on Drugs and Crime*. https://www.unodc.org/res/wdr2021/field/WDR21_Booklet_2.pdf.
[3] *Ibid.*

to contact huge networks of potential buyers by using methods such as hashtags and personal story captions. Crypto currency has led to a surge in illicit online transactions as it offers reliable and anonymous transactions. This paper attempts to explore the relationship between the trafficking of illicit drugs and the rise of the digital economy. Specifically, this paper focuses on pathways of trade related to crypto currency transactions.




[4] Figure 1 showing the hierarchical structure of the internet.

## Cryptocurrency

[4] "World Drug Report 2022." *United Nations : Office on Drugs and Crime* https://www.unodc.org/unodc/en/data-and-analysis/world-drug-report-2022.html.

Cryptocurrencies have been utilized for illegal purchases mainly because they provide a high level of anonymity and are not subject to regulation by traditional financial institutions. Illicit purchases made with cryptocurrencies include buying contraband on darknet markets, money laundering, paying ransom in ransomware attacks, involvement in scams, and evading taxes.[5]

Taking a look at how cryptocurrencies have been used in the drug trade, they are primarily used for purchasing illegal drugs on darknet markets. These markets operate on the dark web, a part of the internet that is not indexed by traditional search engines and can only be accessed using specialized software. Transactions on these markets are often conducted using cryptocurrencies, such as bitcoin, to ensure anonymity and avoid detection by law enforcement.

Cryptocurrencies are digital payment systems that are not backed by the banks. There is no physical currency, but instead there are digital entries into an online database that carry out these transactions. The main objective of cryptocurrencies is to provide security, privacy, and easier transactions. Advanced coding is required to store and transmit the cryptocurrency sata from one person to another[6].

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[5] "World Drug Report 2022." *United Nations : Office on Drugs and Crime* https://www.unodc.org/unodc/en/data-and-analysis/world-drug-report-2022.html.

[6] Kaspersky. "What Is Cryptocurrency and How Does It Work?" *Www.kaspersky.com*, 19 Apr. 2023, https://www.kaspersky.com/resource-center/definitions/what-is-cryptocurrency.

In a study by the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), it was found that bitcoin was the most commonly used cryptocurrency on darknet markets. The study estimated that the annual revenue generated by drug sales on these markets was between 670 million and 1.5 billion euros, with the majority of transactions conducted using bitcoin.

Cryptocurrencies have also been used in traditional drug trafficking operations. For example, in a case in 2019, U.S. authorities arrested two individuals for running a drug trafficking operation that involved purchasing drugs on the darknet using bitcoin and other cryptocurrencies and then reselling them on the streets.

**Darknet Markets**

The use of cryptocurrencies in the drug trade has made it more challenging for law enforcement to track and disrupt these operations. However, authorities have been working to develop new techniques for investigating and prosecuting these cases, such as using blockchain analysis to trace transactions on the blockchain ledger. Online marketplaces hosted on darknet sites are, by nature, temporary and often get shut down by law enforcement authorities only for clones to "pop" back up a few months later. An example of this is the Hydra marketplace dissolution in April 2022 where

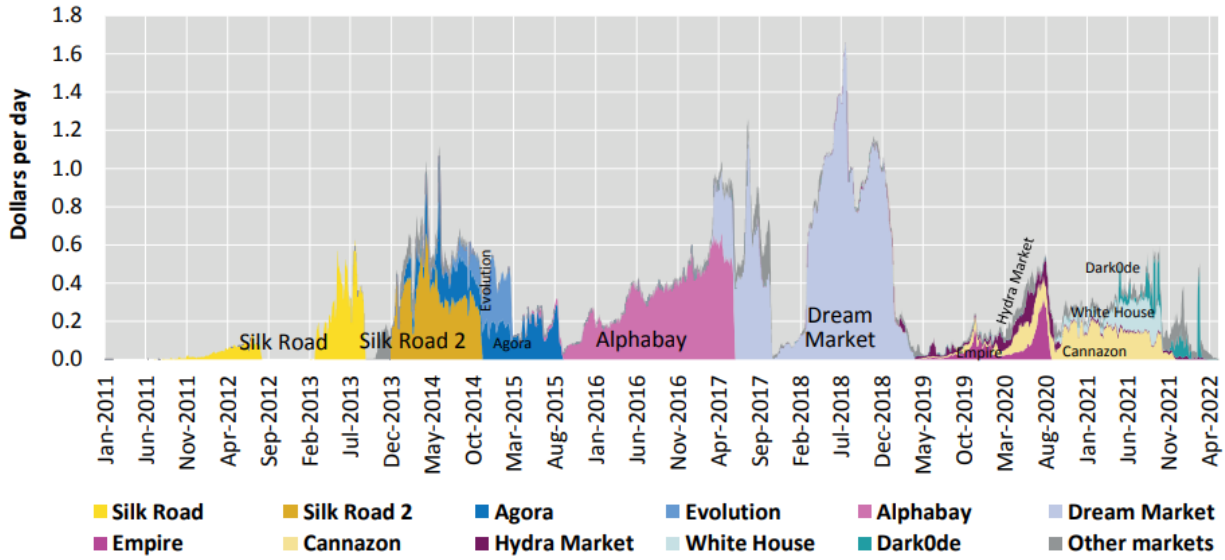
"The Justice Department announced . . . the seizure of Hydra Market (Hydra), the world's largest and longest-running darknet market."[7]

The Hydra website was single handedly responsible for about 80% of all darknet crypto transactions which constitutes about 5.2 billion dollars worth of crypto currency. At the time of the seizure police were able to recover about 25 million dollars of bitcoin in Hydra servers. This was a huge hit to the online drug trafficking marketplace, however, soon after Hydra's shutdown many similar U.S and Russian based websites were created in its stead to fill the void.

Hydra was just one of many that make up the online marketplace. Another popular website was The Silk Road which was shut down in 2013 and used bitcoin almost exclusively to conduct transactions as it would preserve the anonymity of users. This graph below shows the daily sales in the minimum amount of dollars per day from 2011-2021 of the top 38 global

[7] "Justice Department Investigation Leads to Shutdown of Largest Online Darknet Marketplace." *The United States Department of Justice*, 5 Apr. 2022, https://www.justice.gov/opa/pr/justice-department-investigation-leads-shutdown-largest-online-darknet-marketplace.

darknet markets.




[8] Daily sales of the most popular darknet markets from 2011-2021

We see again that a common pattern emerges where the seizure of one popular marketplace only leads to clones taking its place like Silk Road 2.0. Silk Road 1.0 didn't get taken down without leaving behind a legacy for other darknet sites to follow. Silkroad 1.0 provided the foundational transaction system that these darknet sites used, in order for these transactions to not draw attention, a large level of trust must be placed between the consumer and the vendor but also the CDM(crypto-drug market).

[8] Provided by the United Nations Office on Drugs and Crime.

Figure 1.0




[9] SR1 Escrow Diagram

**Transaction Analysis**

The Transaction gets put into a third party that being an escrow, The escrow is a deed held in trust until conditions are satisfied. Through this system SR1 was centralized, this means that monies held by silk road were sent until the fulfilments of the buyer and seller were satisfied. This displays a network effect with the middleman(escrow) being the main driver and this goes into four layers. The first being trust, the escrow system developed trust between buyers and sellers that secured the funds until both parties

[9] Diagram provided by the Global Drug Policy Observatory

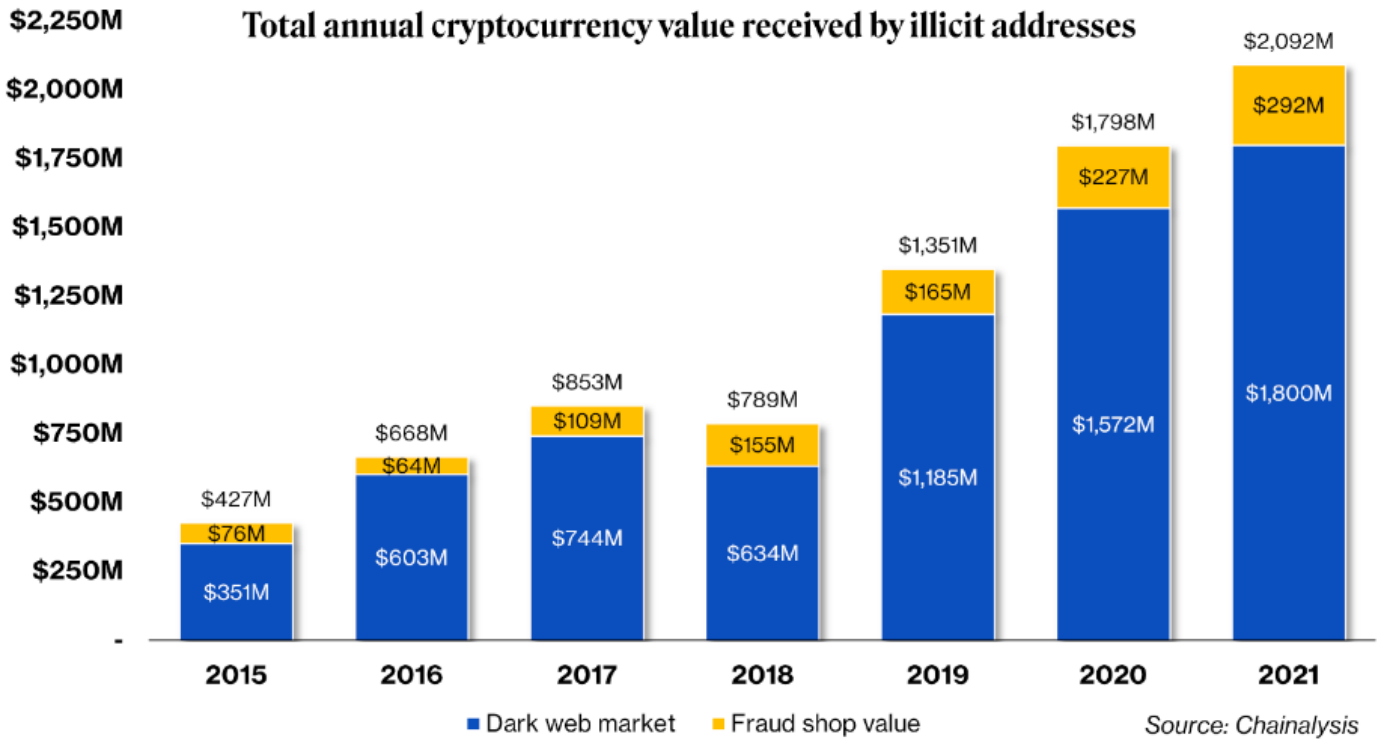
satisfied their requirements this reduced risk of fraud and scams making the platform that much more appealing. Next is anonymity, the use of the escrow system, cryptocurrency, and the tor browser provides increased security and privacy on darknet sites. This generates a growing appeal for users who want to stay under the radar when dealing with illegal online transactions. Which has led to a growth in the user base as more users have found this site to be trustworthy. The creation of a larger user base meant that there were more buyers and sellers, leading to increased liquidity and more transactions. In total, this all creates a positive feedback loop. The escrow system contributes to the positive feedback loop where increased trust and user base led to more transactions, further enhancing the program's reputation and attraction.

The escrow system first implemented by Silk Road 1.0 played a pivotal role in establishing trust and facilitating secure transactions among users, ultimately contributing to the platform's growth and popularity. Recognizing the benefits of this system, many subsequent online black market platforms sought to replicate the network effect achieved by Silk Road. Newer marketplaces, such as Silk Road 2.0, Agora, and AlphaBay, adopted the Silk Road model by incorporating escrow systems as core features. Some even introduced multi-signature escrow systems to add an extra layer of security,

requiring multiple parties to sign off on transactions before funds could be released.

[10] Total Annual Cryptocurrency value received by flagged addresses from 2015-2021

The increased effort of law enforcement to shut down centralized darknet marketplaces, incentivized decentralized platforms like OpenBazaar to emerge, implementing peer-to-peer escrow systems that reduced reliance on central authorities and enhanced privacy and security. Over time, the escrow systems in darknet marketplaces evolved and improved, with new features, better security measures, and more efficient processes being introduced to ensure continued trust and reliability. Consequently, the




[10] Data Provided by Chainalysis https://www.chainalysis.com

adoption and innovation of escrow systems across various online black market platforms allowed them to provide a secure and trusted environment for users, ultimately leading to their growth and sustained popularity.

## Countermeasures

With the rise of cryptocurrency and its use in illicit purchases in the online marketplace, we have also seen new technology being developed to help prevent the illicit use of crypto. One such technology is blockchain analytics technology, which is used to track crypto purchases by analyzing transactions on the blockchain ledger. The blockchain ledger is a public record of all cryptocurrency transactions, firms using blockchain analysis use techniques like data mining to trace the flow of funds from one account to another. Law enforcement agencies are then able to use this data to identify certain payment addresses that can be linked to an individual or a group who is using these payments to purchase or sell illicit drugs. Another example of a way law enforcement is cracking down on the online drug trade is through a technique called “tainting”. This technique traces the flow of funds from a known illicit source, for example a darknet market they then flag any of the next transactions made to the illicit source which then enables law enforcement to possibly flag an individual. These two techniques are useful, however there are ways for criminals to use privacy-focused cryptos and other tools to make their payments harder to trace. This system

was replicated onto other sites like Silkroad 2.0 and Hydra as it provided greater security measures.

## Conclusion

In conclusion, the emergence, retention, and rising intensity associated with the implementation of cryptocurrencies into virtual drug marketplaces firmly depicts the pathway in which future illicit transactions will occur. Cryptocurrency darknet transactions currently make up a miniscule amount of the aggregate quantity of illicit drug sales worldwide, but are steadily increasing. Banking and transactions technologies are rapidly changing and constantly in flux. The integration of easy-to-use mobile applications that support dark web access, like the mobile Tor browser, further promote the use and adaptation of cryptocurrency in everyday transactions. It is not inconceivable that cryptocurrency transactions will make up a majority of the illegal drug trade in the coming years. Providing enhanced security and privacy measures promotes the use of these technologies by malefactors and other corrupt actors that covet these illusive pathways of transactions. Currently, the majority of illicit drug marketplaces are localized and their transactions take place with physical dollars, the inevitable metamorphosis from physical to virtual is only a matter of time.

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