

# Mapping the Threat of Misuse of Blockchain Domain Name System (BDNS) Technology in Online Gambling in Indonesia: Analysis Using a Scenario Matrix Approach

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## Abstract

Web3 technology echoes the paradigm of a secure, transparent, and privacy-preserving decentralized internet. Unfortunately, this digital transformation has opened up new opportunities for cybercriminals, for example online gambling bookies can utilize the Blockchain Domain Name System (BDNS) running on Web3 as a way to avoid tracking and blocking. This analysis aims to map the potential threats from misuse of BDNS technology through a two-dimensional scenario matrix approach using two main types of variables: (1) Native Web3 integration into popular browsers, and (2) Level of BDNS adoption by online gambling sites. The four scenarios produced will describe various levels of risk that require different mitigation strategies, in certain combination conditions will create the highest threat conditions where the conventional domain name blocking system is no longer effective in blocking online gambling sites. The results of this study are expected to identify weak signals from the evolution of online gambling threats, as well as become a basis for government agencies or policy makers in preparing anticipatory steps in dealing with the dynamics of digital threats in the Web3 era.

## 1. Introduction

The phenomenon of online gambling in Indonesia has experienced an increasing trend over time. The Financial Transaction Reports and Analysis Center (PPATK) reported that the turnover of online gambling transactions in Indonesia has not experienced a significant decline. It was recorded that in the fourth quarter of 2024, the turnover of online gambling funds reached IDR 359 trillion, an increase from the previous year. The increasing use of smartphones and social media has made online gambling activities increasingly developed and easily accessible to various groups of people. This ease of access is believed to be able to increase the number of online gambling players compared to conventional gambling (Makarin & Astuti, 2023). Due to the ease of access and intense promotion, online gambling games such as slot gambling, online poker, online lottery attract the attention of the public with the lure of achieving instant wealth, unknowingly online gambling players have the potential to be trapped in financial losses, damaged mental health, involved in various social problems and crime (Tempo, 2023).

The rampant and massive practice of online gambling has caused many losses and negative impacts, so that Indonesia is said to have entered a state of "Online Gambling Emergency" (Tempo, 2024). Article 27 paragraph (2) of Law Number 11 of 2008 concerning Electronic Information and Transactions (UU ITE)

explains the prohibition on the dissemination of information containing elements of gambling online, based on this, of course, the government should eradicate all types of online gambling in Indonesia.

Table 1. Number Of Online Gambling Transactions In Indonesia

<b>Year</b>	<b>Transaction (Trillion Rupiah)</b>
2017	2
2018	3,9
2019	6,3
2020	15,8
2021	57,9
2022	104,4
2023	327
2024	359
Q1 2025	47

Source: Goodstats.id, Bloombergtechnoz, Komdigi

The Ministry of Communication and Digital (Kemenkomdigi) which acts as a representative of the government regarding the enforcement of the ITE Law, in collaboration with various ministries and institutions, formed the Online Gambling Eradication Task Force (SATGAS). This SATGAS is tasked with making various efforts to eradicate online gambling such as conducting socialization to the community, coordinating with related parties, and actively blocking sites (Kominfo.go.id, 2024). As of January 21, 2025, the Ministry of Communication and Digital has blocked around 5.7 million sites containing online gambling (Antaranews, 2025).

Although the government remains active in blocking sites containing online gambling, it is possible that new gambling sites will always emerge (Adam, 2024), even in the future gambling sites that utilize the evolution of the Web3 internet can bring new cyber threats because Web3 technology increases the complexity in terms of monitoring and complicates law enforcement (Melnyk, 2024) due to its pseudonymous and decentralized nature.

This research was conducted in order to realize public awareness, strengthen law enforcement and campaign against online gambling using a two-dimensional scenario matrix approach. The two-dimensional scenario matrix method allows mapping of various potentials that arise against the misuse of the Blockchain Domain Name System (BDNS) which has the potential to be used in online gambling practices in the future. This research is expected to provide a strong foundation for the government in building a better and more sustainable prevention strategy in eradicating online gambling in Indonesia.

## 2. Literature Review

### 2.1. Web3

Web3 is a decentralized evolution of the internet, where this technology gives users more control over their data and digital identity because data is not stored centrally. Web3 allows users to interact without intermediaries, thereby increasing security and prioritizing privacy (Telkom University, 2024).

### 2.2. Blockchain Technology

Blockchain technology provides a transparent, immutable, and distributed data recording mechanism across the network, which is the core of Web3. Validated transaction data is stored in each block of the chain, which prevents manipulation and ensures information integrity (Yaga et al., 2018).

### 2.3. Domain Name System (DNS)

DNS is an important system in internet infrastructure that is responsible for translating domain names into IP addresses. In the Web3 era, DNS can be combined with blockchain technology to become the Blockchain Domain Name System (BDNS). This will create new cyber threats, because BDNS eliminates centralized authority so that it is more resistant to censorship and manipulation (Giamouridis et al., 2024). Ultimately, online gambling sites cannot be blocked by conventional blocking methods (Figure 1). Online

gambling sites that adopt BDNS cannot be blocked because internet users are directly connected to the blockchain network (Figure 2).

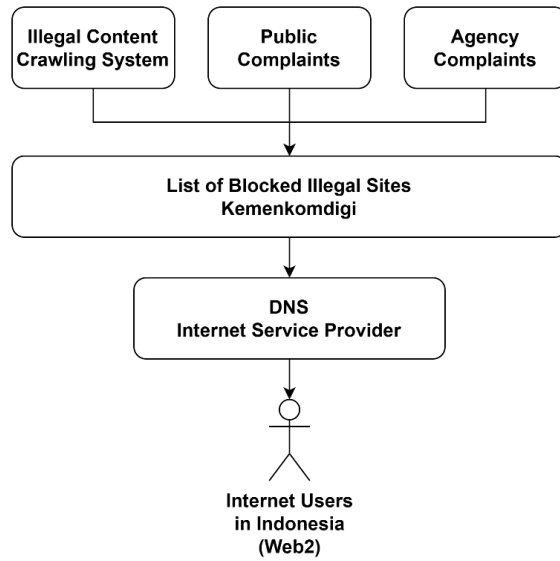


Figure 1. Conventional Site Blocking in Indonesia

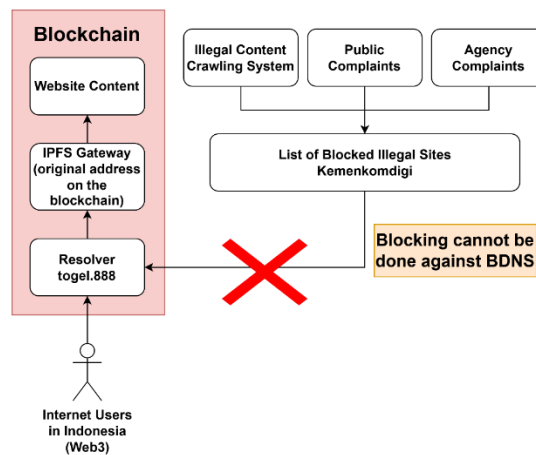


Figure 2. BDNS Site Blocking in Indonesia

## 2.4. Web3 Adoption

Although Web3 technology has not been fully adopted natively by the Top 3 major browsers such as Google Chrome, Apple Safari, and Microsoft Edge (Statcounter, 2025), Web3 technology has been adopted in several other leading browsers such as Brave and Opera which have supported the integration of crypto wallets and blockchain-based domains (Nadcad, 2025). Web3 access on browsers allows users to access decentralized domains (BDNS) to open illegal content such as online gambling. Gambling site managers can create sites on the blockchain to avoid detection and blocking by the government.

## 2.5. Two-Dimensional Scenario Matrix

The two-scenario matrix approach is a strategic analysis tool that allows exploration of various future possibilities based on two main uncertainties, resulting in four different scenarios, helping to make planning and decision-making processes more adaptive (Stucki, 2022). The scenario matrix can be accompanied by visualizations that can help stakeholders. This is done so that each party can get the same understanding of the issues and potential impacts of BDNS adoption on internet regulation and its various abuses in domain name naming that are often carried out in online gambling cases.

### 3. Results and Discussion

#### 3.1. BDNS Functions

BDNS has three main functions (Opensea, 2025) in the Web3 ecosystem, namely as an alias for a crypto wallet, as an alias for NFT (Non Fungible Token, a unique digital asset on the blockchain), and as an alias for a site domain name. Unlike conventional site domain names or TLDs (Top Level Domains) such as .com, .net, .org, .id, BDNS domains have TLDs that are adjusted to the blockchain network where they are located, for example .eth on the Ethereum network, .sol on the Solana network, and others (Table 2).

Table 2. Top Level Domain (TLD) BDNS

Blockchain	TLD
Ethereum	.eth
Polygon	.crypto, .x, .wallet, .nft, .blockchain, .bitcoin, .888, .go
BNB	.bnb
Solana	.sol
Bitcoin	.btc

#### 3.2. Example of BDNS TLD Implementation

Similar to conventional site naming, in BDNS the site name can be chosen as desired or conditioned to the theme of the site category, for example:

- Place Name Category: bali.blockchain, jakarta.x
- Profession Category: dokter.x, hukum.go, guru.go, haji.go, ahlihukum.go
- Business Category: batik.x, gaming.wallet, kafe.x, anime.nft
- Financial Category: invest.eth, nabung.wallet, investasi.wallet, kredit.crypto, dana.crypto
- Socio-Cultural Category: jawa.crypto, nusantara.crypto, pemuda.x, karangtaruna.wallet, wargabatak.x
- Government Agency Category: jabar.wallet, kota-tangerang.go, dishub-bali.go, komdigi.go, cctv-jateng.blockchain
- Online Gambling Category: togel.888, zeuswin.x, slot.go, maxwin.wallet.

#### 3.3. Blocking Proposal on BDNS

Blocking domain names running on browsers that support Web3 natively on a blockchain network is nearly impossible, because both the resolver (domain name translator) and the site content are both in a decentralized blockchain (no central authority) and cannot be manipulated. There are ways that can be done technically, namely: the first way, the government encourages the development of a national web browser (made domestically) so that it has full control over domain name access, the second way is by creating a policy by encouraging Web3 browsers used in Indonesia to have a pre-load version that already has an extension module installed containing a blacklist database of domain names that must be downloaded from the Ministry of Communication and Digital, then the browser is obliged to block the display of illegal content.

#### 3.4. Application of Scenario Matrix

The scenario matrix is formed from two main dimensions (Figure 3), namely:

- Horizontal axis (x): Adoption rate of popular Web3 browsers (Chrome, Safari, Edge)

- Vertical axis (y): Adoption rate of BDNS on online gambling sites.

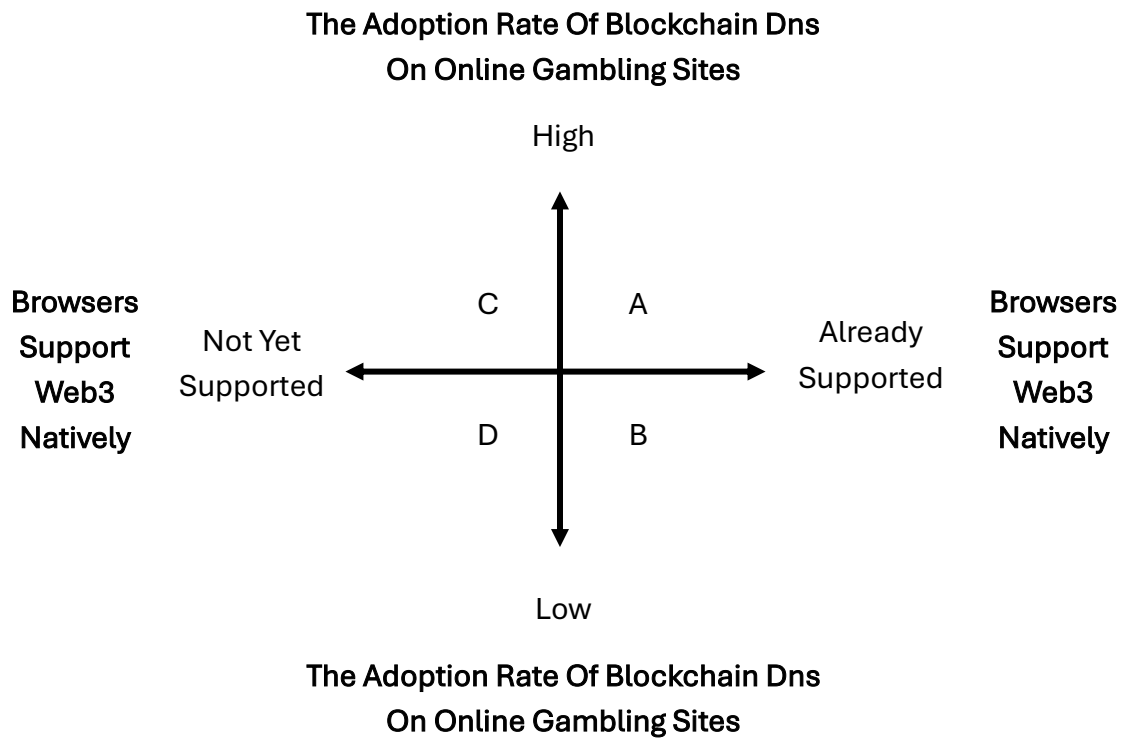


Figure 3. Scenario Matrix

**Scenario A: Browsers already natively support Web3, high BDNS adoption.**

The majority of popular browsers in the world have adopted Web3 technology natively, and many online gambling sites already use BDNS.

Implications:

- This is a major threat to the Indonesian government because online gambling sites are very difficult to block.
- Blocking with conventional methods is no longer effective.
- People can directly access illegal sites without additional configuration such as VPN access.
- Installing extensions containing blacklists is no longer possible because browsers can already run BDNS natively.
- The Indonesian government can build diplomatic steps by submitting a request to the BDNS project platform to submit a block on domain names involved in online gambling sites, but this is very difficult and almost impossible to do.
- The Indonesian government is a bit late if it wants to develop its own browser, but it can modify existing open source browsers such as Chromium, Fenix, or Brave, so that the BDNS feature can be disabled or limited.

**Scenario B: Browsers already natively support Web3, low BDNS adoption.**

The majority of popular browsers in the world have adopted Web3 technology natively, but not many online gambling sites use BDNS.

Implications:

- Threats are starting to emerge but are still under control because the majority of online gambling sites still use conventional DNS.
- BDNS technology has been implemented but the public is not yet aware of it, the use of online gambling sites via BDNS could explode at any time.
- The threat of a snowball effect, if several large online gambling sites have successfully used BDNS, other gambling sites will follow.
- The Indonesian government is encouraged to immediately develop its own browser, as has been done by other countries, for example China with QQ Browser/UC Browser or Russia with Yandex.

**Scenario C: Browsers do not natively support Web3, BDNS adoption is high.**

The majority of popular browsers in the world have not adopted Web3 technology natively, but many online gambling sites already use BDNS.

Implications:

- The threat exists but it's hidden.
- Only internet users who have technical knowledge (in configuring Web3) can access BDNS.
- There is additional time for mitigation by immediately formulating strategic policies, for example asking browsers to install special blacklist extensions for users in Indonesia.
- The Indonesian government is advised to develop its own browser because high BDNS adoption will encourage popular browsers to implement Web3 features natively in the future.

**Scenario D: Browsers do not natively support Web3, BDNS adoption is low.**

The majority of popular browsers in the world have not natively adopted Web3 technology, and not many online gambling sites use BDNS.

Implications:

- Threats can still be controlled.
- Conventional DNS blocking is still effective.
- The government will continue to conduct research and supervision of Web3 technology in the future.

## 4. Conclusion

This study found that the use of Blockchain Domain Name System (BDNS) technology in online gambling practices has the potential to pose a threat to the monitoring and blocking system of sites in Indonesia. BDNS allows gambling sites to avoid surveillance and blocking, especially when used by browsers that use Web3 technology natively. Through a two-dimensional scenario matrix approach, this study successfully mapped four threat scenarios based on the level of Web3 adoption by popular browsers and the level of BDNS usage by online gambling sites. The results of the analysis show that Scenario A, where popular browsers already support Web3 by default and the level of BDNS usage is high, is the riskiest condition. This is because conventional methods make it almost impossible to block online gambling sites. In Scenario A, the government does not have enough time and solutions to carry out mitigation.

Before Scenario A occurs, namely in Scenarios B and C, the government still has time to encourage the development of a national browser or encourage regulations that require the implementation of blacklist

extension modules on popular browsers, especially for the Indonesian region. These steps are considered important as a precaution against the possibility of increasing threats that cannot be handled with old methods. Overall, the findings of this study will provide an important foundation for policymakers, government agencies, and the cybersecurity community to anticipate the shifting digital threat landscape in the Web3 era, especially in relation to combating online gambling. This study also emphasizes that cross-sector collaboration and adaptive approaches are essential to address the challenges of increasingly complex and difficult-to-control new technologies.

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